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ETCHED BEADS IN INDIA

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ETCHED BEADS IN INDIA

By

M. G. DIKSHIT

**DECCAN COLLEGE
Postgraduate and Research Institute
POONA**

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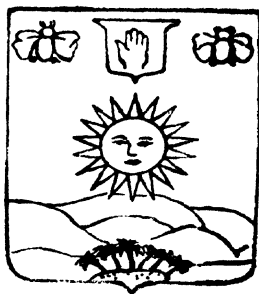
ETCHED BEADS IN INDIA

Decorative Patterns and the Geographical Factors
in Their Distribution

By

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PREFACE

ETCHED beads are a special variety of stone beads decorated with patterns produced by a chemical process. These are known to occur in the ancient civilizations in the Middle East and have a long duration in India. Abundant material exists in different Museums in India though it has not attracted the attention it deserves, since beads are often regarded as antiquities of "minor" importance.

Two years ago while preparing a *corpus* of such beads, I noticed that the decorative patterns found on them are more or less confined to certain geographical regions. The present monograph intends to bring out this factor in their distribution. Their chronology, even approximate, is at present, far from certain. Bead material from the following Museums in India has been studied for the purpose:

Allahabad: Municipal Museum; *Benares*: Bharat Kala Bhavan; *Bombay*: Prince of Wales Museum of Western India; *Calcutta*: The Indian Museum, Ashutosh Museum of Art (Calcutta University); *Delhi*: Central Asian Antiquities Museum; *Hyderabad*: State Museum; *Jaipur*: Albert Museum; *Kolhapur*: Archæological Museum; *Kondapur* (Hyderabad): Site Museum; *Lucknow*: Provincial Museum; *Madras*: Government Central Museum; *Mysore*: Archæological Museum; *Patna*: Patna Museum; *Poona*: Museum of the Deccan College Research Institute; *Pudukkottai*: State Museum.

I wish to acknowledge my indebtedness to the authorities and Curators of these Museums, without whose help and willing co-operation it would not have been possible to study the material under their care. Thanks are also due to Babu Shri Nath SHAH, Shri VIJAYA KRISHNA, Messrs. M. M. NAGAR, R. G. GYANI, S. N. CHAKRAVARTI, S. A. SHERE, T. S. SUNDARAM, Khwaja Muhammed AHMED, for their manifold courtesies. I owe a similar debt of gratitude to Rai Bahadur B. M. VYAS of Allahabad for placing at my disposal his unrivalled collection of beads from Kosam. Mr. A. GHOSH, of the Archæological Survey of India, took a very keen interest in this study and kindly supplied me with the details pertaining to the material from the British Museum. I am obliged to him for much help. My thanks are also due to Dr. H. D. SANKALIA for going through the manuscript and for several suggestions.

I crave the indulgence of the readers for the diagrammatic sketches of the beads prepared by me. I had to resort to them as their photographs hardly did any justice to the patterns, though a few of the best have been illustrated at the end.

Figs. 9-17 and 19-20, on Plate XIX, I owe to the courtesy of Indian Museum, Calcutta, and the Government Central Museum, Madras, respectively.

POONA, January 15, 1949

MORESHWAR DIKSHIT.

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ETCHED BEADS IN INDIA

Decorative Patterns and the Geographical Factor in Their Distribution

I. Introduction

CARNELIAN and agate beads etched with different patterns are of common occurrence in India. The technique of etching was known in this country from a remote past and continues to be employed at certain places even to this day.¹ The earliest mention of the process of etching is that by BELLASIS,² who, in 1857, found the carnelian industry in a flourishing state at Sehwan in Sind, where beads were decorated by the use of ingredients like potash, white lead and the common *Kirar* bush which grows wild in the plains of Sind and the south-western Punjab. The process, however, was soon forgotten or remained in oblivion. The discovery of several etched beads in the Gangetic Valley and in the megalithic burials in South India, explored during the eighties of the last century,³ aroused the curiosity of several scholars in India and outside as to the unusual mode of decorating these beads.⁴ A keen interest in their study revived when etched beads were found at Mohenjo-daro in 1922 and their occurrence in other countries was reported. In 1925, MACKAY⁵ showed that etched beads were an important link between the Sumerian and the Indus Valley civilizations. In a paper⁶ read before the Society of Antiquaries of London, in March 1933,

¹ At Sehwan in upper Sind.

² *JBBRAS*, 5.471; BELLASIS' observations were further restated by COUSENS, *Antiquities of Sind*, p. 55.

³ Besides the list of sites given in the text, the following are some of the early notices of etched beads.

1869—Devaneri, near Mahabalipuram. Carr, *Seven Pagodas*, p. 19.

1872—Megaliths in Salem Dist. *JASB*, 1888.

1873—Megaliths in Salem Dist. *IA*, 2.223.

1875—Megaliths in Coimbatore Dist. *JRAS*, 1875, pp. 22-23.

1880—Irila-banda-patnam. North Arcot. *JASB*, 1880, p. 9.

1881—Vijnat, Sind. *IA*, 9.5.

1891—Shah Garh, Rohilkhand, FUHRER, *Antiquities*, p. 41.

1897—Depar Ghangro, Sind. *PRASI.WC.*, 1897, p. 18.

⁴ HUNTER notes that the patterns on these beads were chemically produced and by heating. *IA*, 2.225.

⁵ "Sumerian Connections with Ancient India," *JRAS*, 1925, p. 697.

⁶ "Further Links Between Ancient Sind, Sumer and Elsewhere," *Antiquity* V (1931), 459-71.

⁷ "Etched Carnelian Beads," *Antiquaries Journal*, XIII, 384-98.

HORACE C. BECK, the well known authority on beads, gave a detailed account of beads found in most of the countries of the world including Mesopotamia, Syria, Turkey, Persia, Persian Baluchistan, China, Tibet, Turkestan and Russia.

In this exhaustive paper, which is still the most important contribution on the subject, he illustrated with micro-photographs the actual effect produced by etching on the surface of beads. He further elucidated the study by giving a typological analysis of the important decorative patterns at different periods. About the same time MAJUMDAR came across an old man called SAHEB DINO in Sind who knew the process of etching. The methods employed by this Sehwan lapidary were later described by MACKAY⁷ in 1933. These, however, were in no way different from those observed by BELLASIS seventy-five years earlier.

Excavations at several important sites like Harappa, Chanhudaro, and Taxila brought to light more material and gave further impetus to the study of etched carnelian beads. At a later stage BECK⁸ also proved that the black lines appearing on etched beads of Type II, were primarily due to mineral salts of metals like copper and manganese.

Since the publication of BECK's paper in 1933, fresh material on this subject has been made available through excavations at different sites in India, acquisitions in museums and private collections and in published works which had previously remained unutilized. The variety of patterns noticed on a large number of beads thus known deserved a fresh approach to be made because the earlier attempts were mainly directed to the study of early Indian specimens, beads from several important sites in the Gangetic Valley having remained practically unnoticed.

This paper aims at the classification of the decorative patterns on Indian beads in the light of the newly available data and stresses the geographical factor in their distribution. Certain decorative motifs appear to be distributed over particular regions within a limited span of time, but their evolution or development through successive periods or stages is beyond the scope of the present inquiry, as most of the Indian material is very insecurely dated.

In the comparative study of the patterns, the possibility of an identical motif originating in two different countries independently of each other at

⁷ "Decorated Carnelian Beads," *MAN*, XXXII, No. 150.

⁸ Communication in MACKAY, *Excavations at Chanhudaro*, p. 200.

different periods renders it difficult to state relationships or culture contacts. Nevertheless, the identity of some of the Indian patterns⁹ made by the intricate process of etching with those from other countries is in some respects remarkable. They may not imply actual culture contacts in the present state of our knowledge but are suggestive of the possibilities which require to be investigated.

II. Main Centres of Etched Beads

BEADS from the following important sites have been included in this paper. The accompanying plates, arranged according to the sites and bead types, are prepared from published photographs or drawings and from examination of original specimens. The illustrations imitate very closely actual specimens but in some cases these are diagrammatic.

NORTH INDIAN SITES

SIND

1. *Brahmanabad*:¹⁰ Dist. Larkhana. Beads found in COUSENS' excavations¹¹ in 1897 and published in *Antiquities of Sind*, Plate XIII. A few from these are preserved in the Prince of Wales Museum, Bombay.
2. *Chanhu-daro*: Dist. Nawabshah. One etched bead found by MAJUMDAR in 1930, published in *Explorations in Sind*, Plate XVII, Fig. 25. Extensive excavations by MACKAY in 1935-36 brought to light several more, published in *Excavations at Chanhu-daro*, Plate LXXIX.
3. *Hisbani*:¹² Khairpur State. Beads found by GHURYE and published in *JUB* 4-2.18; now in the Prince of Wales Museum, Bombay.
4. *Mohenjo-daro*: Dist. Larkhana. Beads found by MARSHALL and others during 1922-27, published in *Mohenjo-daro and Indus Valley Civilization*, Plate CXLVI, 43-45; and from MACKAY's excavations in 1927-31, published in *Further Excavations at Mohenjo-daro*, Plate CXI, 4; CXXV, 5; CXXXV, 3 19(g).

⁹ See below Section V.

¹⁰ Only a small portion of the objects and beads found by COUSENS are preserved in the Prince of Wales Museum, Bombay. The rest are probably in the British Museum.

The last chronological limit for the Brahmanabad site is fixed by tenth century glazed Persian pottery. Cf. R. L. HOBSON, in STEIN, *Archæological Reconnaissances in North Western India and South Eastern Iran*, p. 244.

¹¹ See also *PR. ASI. WC.*, 1897, p. 18.

¹² The etched bead from Hisbani is described as having black lines on it. *JUB*. 4-2. 18; Examination of the bead after cleaning it shows that it belongs to Type I, having white lines.

5. *Sirwahi*: Dist. Larkhana. One bead found by BRANFILL in 1881, published in *IA*, 11, Plate opposite page 5, No. 21.

PUNJAB AND N. W. F. PROVINCE

6. *Akra*.¹³ Dist. Bannu. Beads presented to the Indian Museum, Calcutta by C. J. ROGERS, in 1890. Unpublished.
7. *Harappa*: Dist. Montgomery. Beads found by SAHNI and VATS during 1920-34 and published in *Excavations at Harappa*, Plate CXXXI, Fig. 4. Further excavations in 1946 by the Archæological Survey of India brought to light one more etched bead, published in *Ancient India* No. 3, Plate LI, 14, and Fig. 26, 11.
8. *Sar Dheri*.¹⁴ Dist. Peshawar. Beads found by CORBIAU in 1936-37, published in *Iraq*, 4-11, Plate IV; cf. also *JDL*, 34, Plate II, Fig. 6. Preserved in the Central Asian Antiquities Museum, New Delhi.
9. *Taxila*.¹⁵ Dist. Rawalpindi. Beads from Bhir Mound, Sirkap, Dharma-rajika Stupa and other sites excavated by the Archæological Survey during 1912-34, and described by BECK, *Beads from Taxila*, (*MASI*, 65), Plate I-II.

UNITED PROVINCES

10. *Ahichchhatra*.¹⁶ Dist. Bareilly. Beads in the Indian Museum, Calcutta, since 1888. Unpublished.
11. *Azamgarh*.¹⁷ Dist. Azamgarh. Surface finds collected by RIVETT CARNAC in 1868 and published in *Journal of Indian Art and Industry*, 9(1900). No. 71, Plate 25.
12. *Behat*: Dist. Kanpur (Cawnpur). Beads found by CAUTLEY in 1834 and published by PRINCEP, *Essays on Indian Antiquities*, I, Plate IV. 13.

¹³ The site at Akra near Bannu is described by ANDERSON, *Catalogue of the Antiquities in the Indian Museum*, Part II, p. 147.

¹⁴ Stratigraphical details of the mound at Sar Dheri are given by GORDON, *JISOA*, 11, 182-86. The site is dated between fourth century B.C. to A.D. 200. The bead in question however appears to be a surface find.

¹⁵ Since the publication of BECK's Memoir, few etched beads have been found in the neighbouring sites of Taxila, like Bhamala, Kalawan, and on the Bhir Mound in 1946. The material is not published as yet. Two etched beads from Sirkap have since been published. See *Ancient India*, No. 4, Plate X, 2 and 27.

¹⁶ Excavations on a large scale were conducted at Ahichchhatra during 1940-44. Details regarding the various strata and pottery are published in *Ancient India*, No. 1, pp. 37-59. The site is dated between 300 B.C. to A.D. 1100.

¹⁷ A small collection of beads from Azamgarh exists in the British Museum. *JASB* (NS), 1940, p. 102.

13. *Bairant*:¹⁸ Dist. Benares. Beads from Devi-ka-para mound, about 16 miles North East of Benares. Surface collections preserved in the Bharat Kala Bhavan, Benares, and in the Provincial Museum, Lucknow.
14. *Bhita*:¹⁹ Dist. Allahabad. Surface collections in the Bharat Kala Bhavan, Benares, and in the Provincial Museum, Lucknow.
15. *Chirayya Kot*: Dist. Azamgarh. Beads from a site called Jawahir Khana in the collection of SHRI NATH SHAH, Benares. Surface finds.
16. *Ghosi*:²⁰ Dist. Azamgarh. Surface finds in the collection of SHRI NATH SHAH, Benares.
17. *Indor Khera*:²¹ Dist. Gorakhpur. Beads found by CARLLEYLE in 1882 and presented to the Indian Museum, Calcutta. Unpublished.
18. *Kosam*:²² Dist. Allahabad. Well known site of ancient Kausambi and very rich centre of etched beads. Surface collections, mostly purchased from dealers, amounting to over 1,000 etched beads preserved in the Allahabad, Lucknow, and Patna Museums and in the Bharat Kala Bhavan, Benares.
19. *Kanauj*: Dist. Kanauj. Beads in RIVETT CARNAC Collection published in *Journal of Indian Art and Industry*, 9(1900), No. 71, Plate 25.
20. *Madhuri*: Dist. Benares. Surface finds preserved in the Bharat Kala Bhavan, Benares, and in the writer's collection.
21. *Masaon*:²³ Dist. Ghazipur. Beads preserved in the Bharat Kala Bhavan, Benares, and in the Provincial Museum, Lucknow.
22. *Mathura*: Dist. Agra. Surface finds preserved in the Allahabad Museum.

¹⁸ Punch-marked and Muhammedan coins were collected by CARLLEYLE on the Bairant site in 1879-80; *ASR*. XXII, 108-18. The finds by AGRAWALLA in 1942 included several beads and coins of Huvishka, Yugasena and Muslim coins of the Rulers of Jaunpur. *JNSI*, 5.19-20.

¹⁹ Excavations conducted by the Archaeological Survey of India in 1909-10, point to third century B.C. to sixth century A.D. as the probable date of the Bhita site. *ASI. AR.* 1911-12, pp. 29-94; *JRAS.* 1911, pp. 127-141.

²⁰ Remains of Gupta and Mauryan periods are said to have been found at Ghosi. *ASI. AR.* 1935-36, p. 118.

²¹ The site at Indor Khera was explored by CARLLEYLE in 1874-75. Remains of the houses of Gupta and earlier periods are stated to have been found. *ASR.* XII, pp. 35-66.

²² The famous site at Kosam was partially explored by the Archaeological Survey of India in 1937-38. A large number of objects, including coins, seals, and terracotta figurines, mostly surface finds, preserved in the Allahabad Museum, suggest fifth century B.C. as the earliest probable date of the occupation of the site.

²³ The site at Masaon is described by CARLLEYLE in *ASR*, XXII, 108-18. Antiquities of a varied character from pre-historic implements down to the Muhammedan period are said to have been found.

23. *THEOBALD's Collection*: Beads collected by THEOBALD mostly from sites in the Benares district and published in *PASB*, 1869, Plate VI.
24. *Rajghat*:²⁴ Benares. Well-known site of ancient Kasi. Beads found in excavations conducted by the Archæological Survey of India, in 1940; and other surface collections in the Bharat Kala Bhavan, Benares, in the Provincial Museum, Lucknow, and the Central Asian Antiquities Museum, New Delhi.
25. *Rohtoyya*:²⁵ Dist. Aonla. Beads found by J. POWELL PRICE in 1939 and presented to the Provincial Museum, Lucknow.
26. *Serai Aghat*: Dist. Kanpur (Cawnpur). Beads in the RIVETT CARNAC collection published in *Journal of Indian Art and Industry*, 9(1900), Plate 25-26.

JAIPUR STATE

27. *Rairh*:²⁶ Beads excavated in 1938-40 by PURI and published in *Excavations at Rairh*, Plate XXIII. Preserved in the Jaipur Museum.
28. *Sambhar*:²⁷ Beads found by HENDLEY in 1885 and from the 1936-38 excavations by SAHNI described in *Excavations at Sambhar*, Plate XV, m.

BIHAR

29. *Basarh*:²⁸ Dist. Champaran. Beads found in the excavations by the Archæological Survey of India in 1913-14 and referred to in *ASI. AR*, 1913-14, p. 154-84.
30. *Lauriya Nandangarh*:²⁹ Dist. Champaran. Beads found by MAJUMDAR in 1935 and published in *ASI. AR*, 1934-5. 65 and Plate XXII, l.

²⁴ A short account of the excavations at Rajghat is published by KRISHNA DEVA, in *Annual Bibliography of Indian History and Indology*, III (1940) Ed. BRAZ FERNANDES, pp. xl-li, where the site is said to have been deserted in the Garhwal Period.

²⁵ Mauryan, Mitra, and Kushan coins from Rohtoyya are described by AGRAWALLA, *JUPHS*. 15. 112-3.

²⁶ The date of the site at Rairh is established at 300 B.C. to A.D. 200 from the excavated objects. PURI, *Excavations at Rairh*, p. 56.

²⁷ Antiquities from Sambhar are dated about third century B.C. to fifth century A.D. Cf. SAHNI, *Excavations at Sambhar*, p. 54.

²⁸ Excavations at Besarh site in 1903-04 and 1911-12 point to fourth century B.C. to A.D. 500 as the probable date of the site. Cf. *ASI. AR*. 1913-14, pp. 98-185.

²⁹ Opinions are divided as to the real character of the structure unearthed at Lauriya Nandangarh. MAJUMDAR ascribes it to the Sunga Period. *ASI. AR*. 1934-35, p. 65.

31. *Patna*:³⁰ Dist. Patna. Beads from the ancient site of Pataliputra, Kumbhar and other places in the neighbourhood preserved in the Patna Museum. Unpublished.
32. *Sabaur*:³¹ Dist. Bhagalpur. Beads in the collection of C. E. A. W. OLDHAM published by BECK, *Antiquaries Journal*, XIII, Plate LXVII, 4.

BENGAL

33. *Bangad*:³² Dist. Dinajpur. Beads from the Calcutta University excavations in 1937-38 and published by GOSWAMI, *Excavations at Bangad*, Plates XXXI and XXXII, Nos. 1676, 1691, 2079. (1948). Preserved in the Ashutosh Museum of Art, Calcutta.

CENTRAL INDIA

34. *Maheshwar*:³³ Indore State. Surface finds in the collection of A. V. PANDYA.
35. *Ujjain*:³⁴ Gwalior State. Beads in the British Museum, London.

SOUTH INDIAN SITES

BOMBAY PRESIDENCY

36. *Kolhapur*:³⁵ Kolhapur State. Beads found in the Brahmapuri Excavations during 1945-46. Preserved in the State Museum, Kolhapur.

³⁰ Ratan Tata Excavations at Pataliputra yielded two strata of buildings assigned to the Gupta and Maurya periods. *ASI. AR.* 1912-13, pp. 53-86.

³¹ The beads at Bhagalpur were associated with a coin of Shah Jehan (A.D. 1627 to A.D. 1658.) Cf. *Antiquaries Journal*, XIII, p. 386.

³² The probable date of the Bangad site is established by remains of buildings ascribed to Sunga, Kushana, and Gupta periods. GOSWAMI, "Excavations at Bangarh." *Proceedings of the Third Indian History Congress*, Calcutta, p. 203.

³³ The surface collection at Maheshwar includes several spherical beads with zonal bands and hence have not been illustrated.

³⁴ The details regarding the beads from Ujjain were kindly supplied by A. GHOSH, Superintendent, Department of Archaeology in India, now on deputation in England. Besides the bead illustrated on Plate II, Fig. 12, the collection includes cylinder and barrel-shaped beads with zonal bands and one bead with pentagonal patterns. A preliminary account of the trial excavations at Garh, Kumhar Tekri and Vaisya Tekri sites near Ujjain appears in *AR. Gwalior*, 1938-39, pp. 13-19, and Pls. VI-XXIX. Detailed results are still unpublished.

³⁵ The site of Brahmapuri was first noticed in 1897 while making an approach road. Prof. K. G. KUNDANGAR excavated it partially in 1945-46. Stratified excavations in 1946-47, by Dr. H. D. SANKALIA and the writer, in collaboration with the Archaeological Department of the Kolhapur State, revealed the existence of three main strata attributable to Bahmani, Silahara and Satavahana Periods, respectively (A.D. 1600, A.D. 900 and 200 B.C. to A.D. 200).

HYDERABAD STATE

37. *Kadkal*:³⁶ Dist. Raichur. Beads preserved in the Hyderabad State Museum.
38. *Kallur*:³⁷ Dist. Raichur. Beads in the Hyderabad State Museum and published in *AR. Hyderabad*, 1937-40, Plate XI C.
39. *Kondapur*:³⁸ Dist. Medak. Beads found in 1939-41 excavations by the Archæological Department of the Hyderabad State and described by the writer for the *Hyderabad Archæological Series*. (In the press.) Preserved in the Site Museum at Kondapur and the State Museum at Hyderabad.
40. *Maski*:³⁹ Dist. Raichur. Beads found in 1935-38 excavations by the Archæological Department of the Hyderabad State and published in *AR. Hyderabad*, 1935-36, Plate VI d; 1936-37, Plate XII a; several others unpublished. Preserved at the Site Museum at Maski and in the Hyderabad State Museum.
41. *Paithan*: Dist. Aurangabad. Beads found in SYED YUSUF's excavations in 1937 and published in *AR. Hyderabad*, 1936-37, Plate XX a. Preserved in the Hyderabad State Museum.
42. *Raigir*:⁴⁰ Dist. Atraf Balda. Beads found by HUNT in 1922 and described by BECK, *MAN*, Oct. 1930, 134.

MADRAS PRESIDENCY

43. *Kupgal*: Dist. Bellary. Surface collection by ROBERT BRUCE FOOTE, preserved in the Madras Museum and published in *The Indian Pre-historic and Proto-Historic Antiquities*. Notes on their ages and distribution, 1916, Plate 17. No. 1.

³⁶ In *AR. Hyderabad*, 1936-37, p. 17, the existence of a mint at Kadkal is reported. The coins illustrated are those of the Vijayanagara Emperor Krishnadevaraya (A.D. 1509-1530). Pre-historic antiquities are also reported from neighbouring sites.

³⁷ The monuments and ancient sites near Kallur are described in *AR. Hyderabad*, 1937-40, pp. 24-27 and pp. 31, 32. The beads are said to have been found in association with a Satavahana coin.

³⁸ Out of the 23,000 beads examined on the site only six were etched. The site is ascribed to second century B.C. to fourth century A.D. from the finds. Cf. *Proceedings of the Hyderabad Archæological and Historical Society* (1942), p. 26. Cf. also *ABORI*, 22, 171-85.

³⁹ High antiquity claimed for the objects from Maski is doubtful. The site is dated 500 B.C. to A.D. 200. See GORDON, "The cultures at Maski and Madhavpur," *JASB* (NS) 9(1943), p. 96; and *Antiquity*, 1945, p. 44. More than 300 etched beads have been found in the excavations.

⁴⁰ The megalithic burials at Raigir are described by HUNT in *JRAI*, 54, 140-56.

44. *Manjan-Karnai*: Dist. Chingleput. Site explored by RICHARDS and described in *Geographical Magazine*, LXIX, 198, beads published by BECK, *Antiquaries Journal*, XIII, Plate LXVI, Fig. 9.
45. *Madras Museum*: Madras. Beads collected from various sites in the Presidency. Precise locality unknown. Beads published by BECK, *Antiquaries Journal*, XIII, Plate LXX, Fig. 1. Cf. also FOOTE, *Catalogue of the Pre-historic Antiquities in the Madras Museum*, Plate XIII, No. 844.
46. *Palghat*: Dist. Coimbatore. Beads from megalithic burials near Palghat, preserved in the Madras Museum. Unpublished.
47. *Paravai*: Dist. Madura. Beads from megalithic burials excavated by REA and published in *JASB*, LVII (1888), 61 and Plate.
48. *Peyal*: Taluk Kulattur. Pudukkottai State. Beads found by T. S. SUNDARAM, Curator of State Museum, Pudukkottai, Pudukkottai State.
49. *Sangankallu*: Dist. Bellary. Surface collections by SUBBA RAO, published in *BDCRI*. 8.3-4. Plate III, Fig. 3. Preserved in the Museum of the Deccan College Research Institute, Poona.
50. *Shevroy Hills*: Dist. Salem. Beads in BRUCE FOOTE collection in the Madras Museum. Published in FOOTE, *op. cit.*, Plate 17, Fig. 2.
51. *Sulur*:⁴¹ Dist. Coimbatore. Beads found in megalithic burials by TUCKER in 1929 and illustrated by BECK, *Antiquaries Journal*, XIII, Plate LXIX, Fig. 3 and *MAN*, Oct. 1930, Plate K.
52. *Vellalur*:⁴¹ Dist. Wynaad. Beads found by CAMMAIDE in 1928 and published by BECK, *Antiquaries Journal*, XIII, Plate LXIX, Fig. 3, and in *MAN*, Oct. 1930, Plate K. 4; and L 1-2.
- 52A. *Montapalle*, near Arikamedu in French India. Beads found by NUMA LAFFITTE and published in *Rapport D' ensemble sur les Fouilles Executees dans le sud De L'Inde*, Paris, 1932.
- 52B. *Billikambe Perunganad*, Nilgiri hills. Beads found by J. W. BREEKS, in a "barrow" in 1872; published by FOOTE, *Catalogue of the Pre-Historic Antiquities in the Madras Museum*, Plate XIV, No. 835d 1-2. Now in the Madras Museum.

⁴¹ The beads from Sulur and Vellalur have further been described by BECK, "Beads from Megalithic Tombs in South India," *Proceedings of the First International Congress of Pre-Historic and Proto-Historic Sciences*, p. 269.

MYSORE STATE AND COORG

53. *Chandravalli*:⁴² Dist. Chitaldrug. Beads found by the Mysore Archæological Department in the 1936-37 excavations and preserved in the Mysore State Museum. Unpublished.
54. *COORG*: Beads from megalithic burials. Precise locality not stated. Beads published by WALHOUSE, in *IA* 4.13 with Plate.
55. *Moory Betta Hill*: North Coorg. Beads excavated by COLE in 1868 and published by OLDHAM in *PASB*, 1869, Plate V.

III. Etched Beads of Types I, II, and III

ACCORDING to the method of their manufacture, three principal types of etched beads have been recognized. These are:

Type I—White patterns on red background.

Type II—Black patterns on whitened surface of stone.

Type III—Black patterns etched directly on the stone.

TYPE I. Beads of Type I with white patterns on the natural surface of the stone are by far the most common. The process of etching as already stated, was first described by BELLASIS⁴³ in 1857 as follows:

“Respecting the cornelian ornaments found figured with patterns in white lines, a perfectly smooth surface, and which I thought were so curious. . . . I have made further inquiry: and while at Sehwan, in Upper Sind, an old city famed for cornelian engravers, I found some stones figured exactly in a similar manner. On examination, it was ascertained that the chief ingredients used were potash, white lead and the juice of the Kirar bush (*Capparis aphylla*), made into a thick liquid, and applied with pen on the cornelian, which on being exposed to a red heat in charcoal rendered the device indelible.”

It would appear that beads were first decorated before drilling. Numerous etched specimens found at Chanhudaro were broken while boring the holes. A large collection of unperforated specimens from Kosam is preserved in the Allahabad Museum.⁴⁴ Carnelian and black agate seem to be

⁴² A preliminary account of the excavations by KRISHNA is published. The details regarding the beads are from the specimens in the Mysore Museum. The site belongs to the Satavahana Period. Cf. *Excavations at Chandravalli*, Supplement to Mysore Archæological Report, for 1929.

⁴³ Cf. *JBBRAS*. 5:471.

⁴⁴ Beads from Sabaur, Bhagalpur are similarly unperforated.

generally preferred but very rarely beads of milky quartz, green jasper and even faience are found decorated in this way.

Microscopic analysis of these beads by BECK showed that the effect of etching was to produce a number of minute spots, under different coefficients of expansion. The white layers do not affect the extreme surface of the stone and the soda enters into the body of the bead in very minute particles.

On the beads of the Indus Valley Period the white layers have the appearance of a light patina, but on several hundreds of beads from historical sites like Kosam and Rajghat, these layers form a very thick encrustation almost similar to enamel, for which reason these are often described as enamelled beads.⁴⁵ A specimen recently purchased at Lucknow showed that the white layers had reached the depth of about '83 mm. below the surface.

TYPE II. In beads of Type II, the entire surface of the bead is whitened by a treatment with alkali and the patterns are drawn in black lines. These are caused by the use of the mineral salts of metals like copper and manganese. The latter produces a somewhat purplish tinge seen on some specimens from Chanhudaro and a curious tooth-shaped pendant from Kosam.

Beads of Type II were, till now, considered to be very rare. In 1933, BECK reported of twelve specimens⁴⁶ only but several have since been found. The large collection from Kosam contains nearly 150 beads of this type. Their occurrence at other sites⁴⁷ like Brahmanabad, Kanauj, Kolhapur, Kondapur, Masaon, Maski, Patna, Taxila and Ujjain now indicates that the process was not so uncommon in India as was formerly supposed.

The antiquity of beads of Type II has been traced as far back as 2,300 B.C. One bead from Mohenjo-daro is decorated with this process,⁴⁸ while four have been found at Chanhudaro.⁴⁹ Specimens from Tell Asmar, Ur and Kish in Mesopotamia point to the same early date. Beads from Persian Baluchistan and Damascus show the continuance of the type at a later period outside India.

⁴⁵ "A dealer in Lucknow did not know of "Etched" beads but displayed several as "Enamelled" ones.

⁴⁶ These specimens from Ur, Damascus, Persian Baluchistan, Tell Asmar, and Taxila are illustrated by BECK, *Antiquaries Journal*, XIII, Pls. LXVI-LXVIII.

⁴⁷ See Plates II and III for these beads.

⁴⁸ Cf. MACKAY, *F.E.M.*, Plate CXI, Fig. 4. [= Plate II, 1.]

⁴⁹ MACKAY, *Excavations at Chanhudaro*, Plate LXXIX, Figs. 6, 10, 12, and 14. [= Plate II, 2-4.]

Among Indian specimens, the Indus Valley beads have just been described. Two beads from Sirkap, Taxila,⁵⁰ are dated first century A.D. Those from the Gangetic Valley, viz., at Chirayya Kot,⁵¹ Kosam,⁵² Masaon⁵³ and Rajghat⁵⁴ indicate that the process continued there till about the fifteenth century A.D. A specimen from Patna⁵⁵ is believed to have come from the Mauryan levels. In the Deccan, two beads found in the Kolhapur⁵⁶ excavations point to the second century B.C. as the probable date for the type. One bead,⁵⁷ however, was also found in the Bahmani layers (sixteenth century A.D.). At Kondapur in the Hyderabad State, the Satavahana date is established by one bead;⁵⁸ while Maski⁵⁹ has produced four such, but accurate dating is not possible.

TYPE III. In beads of Type III, a pattern in black is etched directly on the original surface of the stone. These beads are extremely scarce. Only one was found at Harappa,⁶⁰ dated about 2,300 B.C., while another from Sirkap, Taxila,⁶¹ is ascribed to the first century A.D. To these may now be added two more from Kosam,⁶² preserved in the Allahabad Museum.

The pattern on the fragmentary bead at Harappa is a circular ring at the margin of an oval-shaped bead. The Sirkap specimen has only a zonal band in the centre of a spherical bead. The two new beads from Kosam are barrel-shaped and have on them geometrical patterns,⁶³ which are commonly noticed on beads of Type I-II.

New Sub-Varieties of Types I, II, and III

EXAMINATION of several beads now reveals that the three main types above described can now be sub-divided into Varieties A and B from the difference in the technique of manufacture. These combine on them two of the three processes simultaneously.

⁵⁰ BECK, *Beads from Taxila*, Plate I, 2 and II, 27. [= Plate II, 6-7.]

⁵¹ Beads from Chirayya Kot have black dots on whitened surface similar to Plate II, Figs. 7 and 9.

⁵² Plate III, Figs. 1-8. Besides these the Kosam collection includes beads with spots (Pattern 10) which are not illustrated

⁵³ Cf. Plate II, Fig. 15.

⁵⁴ Beads of Type II at Rajghat are decorated with Pattern 10 but not illustrated.

⁵⁵ See Plate II, Fig. 8.

⁵⁶ Plate III, Figs. 14 and 15.

⁵⁷ Plate III, Fig. 15.

⁵⁸ Plate III, Fig. 13.

⁵⁹ Plate III, Figs. 9-12.

⁶⁰ Plate IV, Fig. 1.

⁶¹ Plate IV, Fig. 2.

⁶² Plate IV, Figs. 3-4.

⁶³ Pattern Nos. 15 and 6b respectively.

VARIETY A (Combination or variation of Type I-II). In beads of Variety A, the natural surface of the bead is first etched white leaving considerable portions from it unaffected, like Type I. Black lines appear as second etching over this partially whitened portion as in Type II.

VARIETY B (Combination of Type I-III). In beads of Variety B, both black and white patterns are etched on the bead surface simultaneously but alongside, and do not overlap as in Variety A.

In both these varieties the natural background of the stone and the bi-coloured etchings are seen simultaneously, a feature which is absent from beads of Type II as also in Types I and III which are decorated in one colour only.

In their manufacture, however, beads of Variety A would require double heating as the black lines appear over the white and not alongside as in Variety B. For decorating the latter, the patterns in two different colours were put over the surface and a single heating produced the desired effect.

Beads of Variety A are at present known from five sites⁶⁴ only. In the Kosam collection at Allahabad, there are three beads (two agate and one carnelian) which are decorated with large white spots etched by the first process. These spots are again re-etched in black closely following the outline of the white concentrically. This has the effect of "eyes" all over the bead and the pattern is very pleasing. The same technique is followed on another Kosam bead in the Lucknow Museum. A bead from Patna (Patna Museum No. 1005) is similarly decorated. Rajghat and Chirayya Kot have also produced identical beads.

A specimen from Maski,⁶⁵ now in the Hyderabad Museum, however, has a different pattern. This barrel-shaped bead is decorated with zonal bands with a chevron in the centre. The marginal bands, hardly 1/32 of an inch in breadth, are re-etched in minute black zigzag lines, painted with great care and patience.

The same technique seems to have been employed on a bead from Khotan found by STEIN⁶⁶ described as follows:

⁶⁴ As the beads of Variety A, from Kosam, Patna, Rajghat, and Chirayya Kot are similarly decorated, these are shown by one drawing on Plate IV, Fig. 5.

⁶⁵ Plate, IV, Fig. 6.

⁶⁶ *Serindia*, I, p. 122.

Kh. 02. q. Part of a light red carnelian bead, treated with intersecting bands of white and white dots. Here black appears also in the middle of white.

The specimen is illustrated in *Serindia*, IV, Plate 4; and though it was not examined personally there is hardly any doubt that it belongs to our Variety A.

VARIETY B. There is only one specimen⁶⁷ of this variety emanating from the famous site of Bhita, near Allahabad. This bead, now in the Provincial Museum, Lucknow, (No. 48:112) has on it alternating bands of white and black etched directly on the stone. It is cylindrical in shape. Though the decorative pattern is of the commonest type, it is unique in so far as its method of manufacture is concerned.

IV. Distribution of Decorative Patterns

THE technique of etching is a difficult process. The accuracy and fineness of the decorative patterns show a very thorough knowledge of hard stones like carnelian and agate. Repeated occurrence of the same pattern on beads from more than one site, shows the trend of fashions current in the locality at certain periods, and the places when not distant might suggest culture contacts between people familiar with the same technique. In portable antiquities like beads and coins which easily travel from one place to another, it is also possible that actual migrations may have taken place and the possible routes could be traced to establish trade relations. The study of these patterns therefore becomes as important as the designs on painted pottery.

A careful analysis of the patterns on Indian beads reveals two widely different tendencies in the manner of decoration, confined to the Southern and Northern parts of India respectively.

The Northern Group includes: (a) Early beads of the Indus Valley Period, belonging to one of the oldest civilizations in India; and (b) beads from several historical sites in the Gangetic Valley and on the North-Western Frontier.

The Southern Group consists of beads found in the megalithic burials spread throughout the lower Deccan and from sites of the Satavahana Period (200 B.C. to A.D. 200).

⁶⁷ Plate IV, Fig. 7.

The period of these beads is far from certain. In the Northern Group, Indus Valley beads are ascribed to 2,500-2,300 B.C. The materials from a few sites like Taxila is dated accurately within a fair degree of certainty: those emanating from the Bhir Mound are attributed to the fifth to the third century B.C., and those from Sirkap are dated about the first century A.D. For the several historical sites in the Gangetic Valley exact stratigraphical data is not available but on stylistic grounds most of the associated objects range between 200 B.C. to A.D. 500, and even extend to A.D. 1,000. Beads from these sites preserved in the different museums in India, however, are surface finds and without any archaeological context.

Beads from the megalithic burials in the Southern Group are similarly not accurately dated but are believed to be contemporary with the Asokan Period.⁶⁸ The period of the Satavahana sites in the Deccan is established mainly from objects and coins of these rulers.

Irrespective of the chronological data and their place in a wider archaeological setting, large numbers of beads from the above two groups can roughly be divided as follows according to the etched patterns⁶⁹ noticed on them:

NORTHERN GROUP

(a) BEADS OF THE INDUS VALLEY CULTURE

- Pattern No. 1. Square or rectangular flat beads decorated with a complicated design consisting of circles and lines.
2. Spherical beads decorated with concentric circles with their outer arcs touching each other.
 3. Flat oval and lenticular beads decorated with a ring at the periphery.
 4. Similar to above but decorated with a figure-of-eight pattern.
 5. Long oval beads decorated with a guilloche pattern.

⁶⁸ Cf. R. E. M. WHEELER, in *ILN*, 17th Nov. 1947, p. 554.

⁶⁹ The various principal patterns are illustrated on Plate V.

(b) BEADS FROM HISTORICAL SITES

SPHERICAL BEADS

- Pattern No. 6. Beads decorated with pentagons all over the body and arranged on their sides.
- 6a. Beads decorated with pentagonal designs as above but within marginal bands.
 - 6b. Similar to 6a with additional geometrical figure in the pentagonal compartments.
 - 7. Beads decorated with large circles spread all over the body.
 - 8. Similar to 7 but with zones between circles.
 - 9. Similar to 7 but with dots or dashes in the centre of each circle.
 - 10. Beads decorated with a large number of minute spots all over the body.

PLANO-CONVEX BEADS

- 11. Beads decorated with arcs of circles divided into two segments by two vertical lines.
- 11a. Similar to 11 but with additional spots or slits in the upper register.
- 11b. Similar to 11a but with two dots in each arc in the upper and lower registers.
- 12. Large plano-convex beads decorated with a number of concentric circles with a row of dots outside the central portion.

TABLET-SHAPED BEADS

- Pattern No. 13. Large tablet-shaped beads decorated with U-shaped markings near the periphery and designs of crosses, eyes, or spots in the enclosed space.

BARREL-SHAPED BEADS

- Pattern No. 14. Beads decorated with pentagons similar to 6a above.
15. Similar to above with additional hexagons in one or two rows in the centre.
 16. Beads decorated with elongated loops at alternate intervals within zonal bands at the margin.
 17. Beads with rectangular patterns in between the marginal bands.
 18. Beads with three zonal bands, the central one being hatched with small serrated lines.
 19. Beads with zonal bands and rows of three dots.

DODECAHEDRON-SHAPED BEADS

20. Beads decorated at the faceted edges.

SQUARE CYLINDERS

21. Beads decorated with oblique strokes and V-shaped markings in three rows at alternate faces of the four sides.

PENDANTS

22. Drop pendants decorated with a zonal band above or below the perforation and V-shaped or triangular loops on the elongated body.

EARLY INDIAN BEADS

DISTRIBUTION

The material for the study of etched beads of the early period is very scanty but distinctive. While Mohenjo-daro has produced eight beads, the total number of such beads at Chanhudaro exceeds twenty. At Harappa only five beads have been found.

Pattern 1. Beads with the complicated design of circles and lines appearing on two rectangular beads from Mohenjo-daro⁷⁰ is closely related to similar specimens from Chanhudaro, with the difference that in the case of one bead the pattern is etched in black lines⁷¹ and the other has the shape of a hexagonal tablet,⁷² the pattern remaining identical.

Pattern 2. Beads decorated with concentric circles and the outer arcs touching each other is a common pattern on beads from all the three sites of the Indus Valley Civilization. It occurs on spherical beads at Mohenjo-daro⁷³ and Chanhudaro.⁷⁴ Cylinder and barrel-shaped beads have this device repeated at Chanhudaro⁷⁵ and Harappa⁷⁶ respectively.

Pattern 3. Beads with marginal rings are met with at all the three places. Mohenjo-daro⁷⁷ and Harappa⁷⁸ have yielded one each, while three have been found at Chanhudaro.⁷⁹ It is interesting to note that this early device again appears on a similar bead from Indor Khera⁸⁰ in the Gangetic Valley.

Pattern 4. Beads with a figure-of-eight design are very popular at Chanhudaro⁸¹ where nine beads with this decoration have been recovered.

Pattern 5. The guilloche pattern is similarly noticed only at Chanhudaro⁸² and does not occur at the other Indus Valley sites.

Besides these patterns, an oval tablet bead at Chanhudaro⁸³ is decorated with small double quadrant arcs at the margin with a small circle in the centre. A similar bead from Mohenjo-daro⁸⁴ has small circles ar-

⁷⁰ MARSHALL, *M-d*, Plate CXLVI, Fig. 43 and MACKAY, *F.E.M.*, Plate CXXV, 5; CXXXV, Figs. 3, 19 (g). [= Plate VII, Figs. 1-2.]

⁷¹ MACKAY, *Excavations at Chanhudaro*, Pl. LXXIX, Fig. 12. [= Pl. II, Fig. 3.]

⁷² MACKAY, *Ibid.*, Plate LXXIX, Fig. 13. [= Plate VII, Fig. 6.]

⁷³ MARSHALL, *M-d*, Plate CXI.VI, Fig. 45. [= Plate VII, Fig. 4.]

⁷⁴ MACKAY, *Excavations at Chanhudaro*, Plate LXXIX, Figs. 11-12 on beads of Types I and II respectively. [= Plate VII, Fig. 9 and II, Fig. 5.]

⁷⁵ *Ibid.*, Plate LXXIX, Fig. 9. [= Plate VII, Fig. 10.]

⁷⁶ VATS, *Excavations at Harappa*, Plate CXXXI, Fig. 4a. [= Plate VII, Fig. 14.]

⁷⁷ MARSHALL, *M-d*, Plate CXLVI, Fig. 44. [= Plate VII, Fig. 5.]

⁷⁸ VATS, *Harappa*, Plate CXXXI, Fig. 4a. [= Plate VII, Fig. 15.] The pattern is also repeated on a bead of Type III, Plate IV, Fig. 1.

⁷⁹ MACKAY, *Excavations at Chanhudaro*, Plate LXXIX, Figs. 1-3. [= Plate VII, Fig. 11.]

⁸⁰ Bead in the Indian Museum, Calcutta. (No. Ir. K. 35); Plate XI, 13. Plate XIX, Fig. 9.

⁸¹ MACKAY, *op. cit.*, p. 201; Plate LXXIX, Figs. 4-8; MAJUMDAR, *Explorations in Sind*, Plate XVII, Fig. 25; See Plate VII, Fig. 12.

⁸² MACKAY, *Ibid.*, Plate LXXIX, Fig. 8. The statement on page 201, that a Guilloche pattern is not found on carnelian beads outside India is not correct. Beads have been found at Kish by LANGDON, *Excavations at Kish*, I, Plate XXIV, Fig. 2; and by MACKAY, *Sumerian Palace and 'A' Cemetery at Kish*, Plate IV, No. B. 25. Cf. also JRAS. 1925, Plate X Fig. 3. The Guilloche pattern is also noticed on spherical beads of Type II at Tell Asmar. Cf. BECK, *Antiquaries Journal*, XIII, Plate LXVI, Fig. 8G and page 389.

⁸³ MACKAY, *Excavations at Chanhudaro*, Plate LXXIX, Fig. 15. [= Plate VII, Fig. 7.]

⁸⁴ MACKAY, *F.E.M.*, Plate CXI, Fig. 4. [= Plate II, Fig. 1.]

ranged at cardinal points interspaced with arcs near the margin. At Harappa⁸⁵ one barrel-shaped bead decorated with horizontal lines of different lengths has recently been found.

The shapes of most of the beads are such that the bead may lie flat on its body when worn. This is regarded as a characteristic feature of the early beads in India, as similar beads are very rare in the historical period.

(b) BEADS FROM HISTORICAL SITES

Beads of the historical period constitute a large number found on several sites in North India. Geometrical patterns within zonal bands is a very common feature with many of them.

Patterns 6 and 6a. The most predominant among the patterns is a bead decorated with pentagons arranged on its sides. Two shapes of these beads are noticed: (1) Spherical and (2) barrel-shaped.

Spherical beads occur at Bangad,⁸⁶ Bhita,⁸⁷ Chirayya Kot,⁸⁸ Ghosi,⁸⁹ Indor Khera,⁹⁰ Kosam,⁹¹ Madhuri,⁹² Masaon,⁹³ Mathura,⁹⁴ Patna,⁹⁵ Rairh,⁹⁶ Rajghat,⁹⁷ Sankissa⁹⁸ and Taxila.⁹⁹

Barrel-shaped beads (Pattern 14) have been found on the fourteen sites¹⁰⁰ mentioned above, and also at Behat,¹⁰¹ Kanauj,¹⁰² Sambhar,¹⁰³ Serai

⁸⁵ *Ancient India*, No. 3, Plate LI. Fig. 14; and Fig. 26:11. [= Plate VII, Fig. 16.]

⁸⁶ Nine specimens from Bangad are illustrated by GOSWAMI.

⁸⁷ Several beads in the Bharat Kala Bhavan, Benares.

⁸⁸ Four specimens in SHAH Collection.

⁸⁹ Two specimens in SHAH Collection.

⁹⁰ Two specimens in Indian Museum, Calcutta. No. Ir. K. 35. (See Plate XI, Fig. 18.)

⁹¹ The total number of such beads in the Allahabad, Lucknow, and Patna Museums and in the Bharat Kala Bhavan, Benares, exceeds 80. (See Plate XIII, Fig. 1.)

⁹² Two specimens in the Provincial Museum, Lucknow. See Plate XIX, Figs. 5, 6, 8.

⁹³ Two beads in the Bharat Kala Bhavan, Benares.

⁹⁴ Several agate and carnelian specimens in the Allahabad Museum.

⁹⁵ Three specimens in the Patna Museum.

⁹⁶ PURI, *Excavations at Rairh*, Plate XXIII, Fig. 18. [= Plate XI, Fig. 12.]

⁹⁷ Several beads in the Bharat Kala Bhavan, Benares.

⁹⁸ In the RIVETT CARNAC Collection. *Journal of Indian Art and Industry*, 9(1900), Plates 24, 25. Two beads.

⁹⁹ BECK, *Beads from Taxila*, Plate II, Fig. 1. [= Plate VIII, Fig. 8.]

¹⁰⁰ Barrel-shaped beads from:

Rairh. (3 beads) PURI, *Excavations at Rairh*, Plate XXIII, 1; and Plate XXI, Figs. 18-19. [= Plate XI, Fig. 11.]

Sankissa. JASB, 1880, Plate XIV, Fig. 19.

Taxila. BECK, *op. cit.*, Plate II, Figs. 7 and 17. [= Plate IX, Fig. 3 and VIII, Fig. 10.]

Kosam. Plate, XII. Fig. 1. One bead (unstratified) was also found at Sirkap in the 1944-45 excavations. *Ancient India*, No. 4, Plate X, 27.

¹⁰¹ PRINCEP, *Essays in Indian Antiquities*, I, Plate IV, 3.

¹⁰² RIVETT CARNAC Collection. Details from A. GHOSH, Esq.

¹⁰³ SAHNI, *Excavations at Sambhar*, Plate XV, m. (No. 3421).

Aghat,¹⁰⁴ Sar Dheri,¹⁰⁵ and Ujjain.¹⁰⁶

The pentagonal patterns are occasionally repeated on beads of Type II and are also noticed on barrel-shaped beads from Kosam¹⁰⁷ and on beads in the RIVETT CARNAC collection.¹⁰⁸ A spherical bead from Kondapur also bears identical patterns.¹⁰⁹

Pattern 6b. In some beads the pentagons have an additional geometrical figure in each compartment. This figure does not necessarily repeat the pattern outside and may have any shape or merely lines drawn to fill the space. Quite a large number of beads from Kosam,¹¹⁰ Madhuri and Rairh¹¹¹ are decorated in this way. The pattern is more frequent on barrel-shaped beads and is also noticed on a rare bead of Type III from Kosam.¹¹²

Patterns 7-9. Circles form an important decorative device and variations occur in their position on the bead surface. Large circles, however, are by far the most common and are noticed on beads from Brahmanabad,¹¹³ Kosam¹¹⁴ (beads of Type I and II) and Rairh.¹¹⁵ These are sometimes placed within zonal limits on beads from the sites just mentioned. Small strokes or dashes occur in the enclosed spaces of the circles on beads from Kanauj,¹¹⁶ Kosam,¹¹⁷ Taxila¹¹⁸ and specimens in the RIVETT CARNAC collection.¹¹⁹

Pattern 10. Beads decorated with a number of minute spots (common to both Types I and II) are found in a large quantity. The spots are sometimes arranged in rows but in several instances without any order. Their occurrence on no less than eighteen sites in North India is to be noted. These are: Azamgarh,¹²⁰ Besarh,¹²¹ Benares district collection of THEOBALD,¹²² Bhita,¹²⁰ Chirayya Kot,¹²⁰ Ghosi,¹²⁰ Indor Khera,¹²³ Kosam,¹²⁰

¹⁰⁴ RIVETT CARNAC Collection, *Journal of Indian Art and Industry*, 9(1900). Plates 24, 25, 26.

¹⁰⁵ CORBIAU, "New Finds in the Indus Valley," *Iraq*, IV, Plate IIIId, Fig. 14. (See also, *JDL*, 34, Plate II, Fig. 6.)

¹⁰⁶ Beads in the British Museum. Details through the courtesy of A. GHOSH.

¹⁰⁷ Plate III, Fig. 2.

¹⁰⁸ Details from A. GHOSH.

¹⁰⁹ Plate III, Fig. 13.

¹¹⁰ Plate XII, Fig. 2.

¹¹¹ Plate XI, Fig. 6.

¹¹² Plate IV, Fig. 3.

¹¹³ Plate X, Figs. 3, 11, 12.

¹¹⁴ Plate XIII, Figs. 3, 4 and Plate III, Figs. 7, 8.

¹¹⁵ Plate XI, Fig. 3.

¹¹⁶ Plate II, Fig. 14. (with Spots)

¹¹⁷ Plate XIII, Fig. 11.

¹¹⁸ Plate VIII, Fig. 3.

¹¹⁹ Beads not illustrated but similar to Plate VIII, Fig. 3 above.

¹²⁰ Beads from Azamgarh, Bhita, Chirayya Kot, Ghosi, Kosam, and Masaon are not illustrated here.

¹²¹ *ASI. AR.*, 1903-04, pp. 90-98; Fig. 16, No. 11.

¹²² *PASB.* 1869, Plate VI, 16, 17.

¹²³ Plate XI, Fig. 17.

Lauriya Nandangarh,¹²⁴ Madhuri,^{124a} Masaon,¹²⁰ Mathura,¹²⁰ Patna,¹²⁵ Rairh,¹²⁶ Rajghat,¹²⁷ Sankissa,¹²⁰ Taxila,¹²⁸ and Tikri.¹²⁹

At Taxila, the earliest dated bead of this description belongs to the third century B.C., and the decoration persists at Sirkap¹³⁰ and Dharmarajika Stupa in the first century A.D. and later. The specimen obtained at Lauriya Nandangarh is attributed to the Sunga Period. About 130 beads with identical decorations have been found at Kosam being the largest collection of such beads from a single site known so far. At Rajghat, thirty beads in different strata of the excavations are not accurately dated but suggest the fifteenth century A.D. as the last date when the site was deserted. The continuance of the decoration is thus noted for a period of over fifteen hundred years in Northern India.

Pattern 11. Plano-convex beads (with the decoration on the convex surface only) are very popular in the Northern Group. Partitioned circles is the chief decorative motif. Such beads occur in large quantities at Kosam,¹³¹ Madhuri¹³² and Rajghat,¹³³ and are represented in THEOBALD'S collection.¹³⁴ The material of these beads is invariably milky quartz and the pattern hardly stands out against the pale whitish blue background. It is not known if this was with some purpose but exactly identical patterns do not occur on other stones like carnelian and agate.

Patterns 11a and 11b. On certain black agate beads partitioned circles with one or two dots in each hemisphere are a regular feature. These occur at Bhita¹³⁵ and the three sites¹³⁶ above mentioned. The decoration, it would appear, is thus confined to the Gangetic Valley only.

Pattern 12. A number of large plano-convex beads of black agate have on them concentric circles with a row of dots near the margin of the inner-

¹²⁴ ASI. AR. 1931-35, Plate XXII b.

^{124a} Cf. Plate XIX, Fig. 4.

¹²⁵ Twenty-four specimens in the Patna Museum.

¹²⁶ Puri, *Excavations at Rairh*, Plate XXII, Fig. 10. [=Plate XI, Fig. 10.]

¹²⁷ About thirty specimens in the Bharat Kala Bhavan, Benares.

¹²⁸ BECK, *Beads from Taxila*, Plate II, Figs. 27, 29 and 16. For a similar bead found in 1944-45 excavations, see *Ancient India*, No. 4, Plate X, Fig. 2.

¹²⁹ Beads in RIVETT CARNAC Collection. Details from A. GHOSH.

¹³⁰ Beads in RIVETT CARNAC Collection. Details from A. GHOSH. A bead from Bhuila, Dist. Basti, probably bears the same pattern. Cf. ANDERSON, *Catalogue of Archaeological Collections in the Indian Museum*, Calcutta, II, p. 108. Bead No. Ba 73.

¹³¹ A bead from Sirkap, found in 1945, is assigned to Phase II and dated between the beginning of the Christian Era and A.D. 50. Cf. *Ancient India*, No. 4, p. 72, Plate X, Fig. 2.

¹³² Beads from Kosam are not illustrated.

¹³³ Beads from Madhuri are not illustrated.

¹³⁴ Plate XVI, Fig. 1.

¹³⁵ PASB, 1869, Plate VI, Fig. 21.

¹³⁶ Four beads in the Allahabad and Lucknow Museums.

¹³⁷ Beads from Madhuri are illustrated on Plate XVI, Figs. 8 and 10.

most circle. These beads, probably used as central pieces in a necklace, are found at Chirayya Kot,¹³⁷ Kosam,¹³⁸ Madhuri,¹³⁹ and Masaon,¹⁴⁰ and thus have a limited distribution in the Gangetic Valley.

Pattern 13. A characteristic pattern on Northern beads consists of a number of loops or "half-moons" radially etched around the margin of a tablet-shaped bead. The central portion is decorated with spots, stars, crosses and similar designs. The patterns are found repeated on both faces of the bead and occur on carnelian beads exclusively. Beads with this decorative device are reported from Kanauj,¹⁴¹ Kosam,¹⁴² Rajghat¹⁴³ and occur in the THEOBALD collection.¹⁴⁴

A specimen in the RIDGEWAY collection at Cambridge has a row of dots in the centre with U-shaped markings all round. This bead,¹⁴⁵ believed to be very early, is said to have come from Taxila or sites in the neighbourhood. The RIVETT CARNAC collection contains two beads obtained at Kanauj. One¹⁴⁶ of these has a number of crosses around a dotted circle, with the usual loops at the margin. The other has a looped cross near the centre and the marginal moons have an additional dot in each.¹⁴⁷ A bead fragment from Kosam,¹⁴⁸ decorated on both sides, has similar markings with dots in the marginal loops. A clustre of spots, arranged in squares, forms the central design on one side, while the other has figures resembling eyes with brows. On the bead from Rajghat the pattern consists of simple moons and three crosses nearer the margin. Clustered dots in splayed pentagons is the common feature on the beads in THEOBALD's collection.

Patterns 14-15. Barrel-shaped beads constitute a large majority in the Northern Group and exhibit a rich variety in the patterns. Beads with pentagonal designs (Pattern 14) have already been described. With the availability of more space on barrel-shaped beads one or two rows of hexagons are introduced between the pentagons, which are sometimes marked with a central dot in each compartment. This device occurs on the rare bead of Type III at Kosam¹⁴⁹ and is common among beads of Types I and II.¹⁵⁰

¹³⁷ Not illustrated.

¹³⁸ Plate XIV, Figs. 1 and 3.

¹³⁹ Plate XVI, Fig. 9.

¹⁴⁰ Not illustrated.

¹⁴¹ Plate XV, Figs. 11 and 12.

¹⁴² Plate XIV, Fig. 9.

¹⁴³ Plate XVI, Fig. 2.

¹⁴⁴ Plate XV, Figs. 13-15.

¹⁴⁵ Plate VIII, Fig. 18.

¹⁴⁶ Plate XV, Fig. 11.

¹⁴⁷ Plate XV, Fig. 12.

¹⁴⁸ Plate XIV, Fig. 9.

¹⁴⁹ Plate IV, Fig. 4.

¹⁵⁰ Plate XII, Figs. 3, 4; and Plate III, Fig. 4.

THEOBALD's collection contained six similar beads¹⁵¹ and the pattern is repeated frequently on beads from Bhita, Masaon, Madhuri, Mathura,¹⁵² and Rairh.¹⁵³

Pattern 16. A variation of the pentagonal pattern consists of elongated loops within marginal zonal bands. Beads at Kosam¹⁵⁴ belong to both Types I and II; these are similarly known from Rajghat,¹⁵⁵ and the RIVETT CARNAC collections.¹⁵⁶

Pattern 17. Rectangular patterns take the place of pentagons on some beads at Kosam¹⁵⁷ and Rairh.¹⁵⁸

Pattern 18. A very common type of decoration is a serrated line in the centre of a barrel-shaped bead with marginal bands at the ends. The pattern occurs on beads of Types I and II but more profusely on specimens of the latter type. A large collection of these from Kosam¹⁵⁹ exists in the Allahabad Museum. They also occur at Chirayya Kot, Ghosi, Maduri, Patna, and Rajghat.¹⁶⁰ A spherical bead from Taxila¹⁶¹ also has this design and is attributed to the first century A.D. A barrel-shaped Kosam variant¹⁶² has additional triangles annexed to the marginal bands.

Pattern 19. Short barrel-shaped beads have also been found decorated with equidistant rows of three dots within marginal bands. These are found at Brahmanabad,¹⁶³ Kosam,¹⁶⁴ and Patna.¹⁶⁵

Pattern 20. Decoration at the edge of faceted beads is often resorted to and the most commonly noticed shape is a dodecahedron. Several of these beads occur at Kosam¹⁶⁶ and one specimen is known from Rairh.¹⁶⁷

Pattern 21. A square cylinder bead decorated with zonal bands at the margin with oblique strokes and zigzags in the centre appearing on alternate faces, is another common type, which by its occurrence seems to be restricted

¹⁵¹ PASB, 1869, Plate VI, Figs. 8, 9, 10.

¹⁵² Beads from these four sites are not illustrated.

¹⁵³ PURI, *Excavations at Rairh*, Plate XXIII, Fig. 2. [= Plate XI, Fig. 2.]

¹⁵⁴ Plate XII, Fig. 8 and Plate III, Fig. 5.

¹⁵⁵ Not illustrated.

¹⁵⁶ Plate XV, Fig. 5. Another variation of the same motif occurs on Plate XV, Fig. 7.

¹⁵⁷ Plate XII, Fig. 7.

¹⁵⁸ PURI, *Excavations at Rairh*, Plate XXIII, Fig. 3. [= Plate XI, Fig. 8.]

¹⁵⁹ Plate XII, Fig. 6; Plate III, Fig. 1.

¹⁶⁰ Beads from these sites are not illustrated.

¹⁶¹ Plate IX, Fig. 2.

¹⁶² Plate XII, Fig. 5.

¹⁶³ Plate X, Fig. 17.

¹⁶⁴ Plate XII, Fig. 9.

¹⁶⁵ There are four such beads in the Patna Museum.

¹⁶⁶ Specimens not illustrated.

¹⁶⁷ Plate XI, Fig. 4.

to the Gangetic Valley. Such beads are known from Bhita, Kosam, Patna, and Rajghat where they are found in large numbers.¹⁶⁸ The decoration is confined to carnelian beads only.

Pattern 22. Among other shapes, a few drop pendants decorated with a zonal band near the perforation and V-shaped loops on the elongated body are noteworthy. These occur¹⁶⁹ in a large number at Ghosi, Kosam, Rajghat and are included in the RIVETT CARNAC collection.

INDIVIDUAL SPECIMENS OF THE NORTHERN GROUP

Besides the patterns above described, a number of individual beads from sites in the Northern Group show varieties in the manner of decoration and the shapes. These are described according to the find-spots as follows:

Among the beads from Taxila, one cube is found to have crosses with intersecting lines at the edges and diagonals.¹⁷⁰ Double axes occur on two beads¹⁷¹ and "inverted triangles" on one lenticular specimen.¹⁷² A bead is decorated with a cross between two squares.¹⁷³ A cylinder bead has triangles with spots in between arranged within marginal bands.¹⁷⁴ The cross bead above referred to is somewhat similar to beads obtained at Bhagalpur¹⁷⁵ and can be matched with a specimen from Khotan.¹⁷⁶

Beads from Kosam include the following: Twelve leech-shaped pendants in the Allahabad Museum have a horizontal line on the lower portion.¹⁷⁷ Carnelian crescent-shaped spacing beads are decorated on both sides with borders and chevrons in the middle.¹⁷⁸ Both these shapes^{178a} are new to Indian etched beads. A tooth pendant¹⁷⁹ has horizontal lines at the top and rectangles imitating the partitions between teeth. The etchings are not

¹⁶⁸ All these are similar to the Rajghat specimen on Plate XVI, Fig. 6.

¹⁶⁹ Plate XV, Fig. 10, illustrates a specimen from the RIVETT CARNAC collection. Others are similar.

¹⁷⁰ BECK, *Beads from Taxila*, Plate I, Fig. 4. [= Plate IX, Fig. 1.]

¹⁷¹ *Ibid.*, Plate II, Fig. 15. [= Plate VIII, Fig. 6.]

¹⁷² *Ibid.*, Plate II, Fig. 13. [= Plate VIII, Fig. 5.]

¹⁷³ Plate VIII, Fig. 14.

¹⁷⁴ Plate IX, Fig. 6.

¹⁷⁵ Plate XVI, Fig. 14.

¹⁷⁶ STEIN, *Serindia*, Plate IV, Kho. 02 r.

¹⁷⁷ Plate XIV, Fig. 6.

¹⁷⁸ Plate XIV, Fig. 4. DR. V. S. ACRAWALLA informs me that similar crescents are known to him from Rajghat.

^{178a} Outside India, leech-shaped pendants occur in Hissar IIIc. The decoration consists of broad "Inverted V-shaped" bands. Cf. SCHMIDT, *Tepe Hissar Excavations*, Plate XXXV and LXVI (Strings H 3215 and H 3216).

¹⁷⁹ Plate XIV, Fig. 5.

in white but show a purplish brown colour indicating that a different paint was used. On a barrel-shaped bead,¹⁸⁰ "triangle-headed banner" is the decorative motif, well-known to Indian numismatists. But the best specimen of the art of the bead maker is a unique spherical bead of black agate¹⁸¹ on which two birds are enclosed within rhomboid spaces. One of the birds is the common sparrow drawn in naturalistic style but the other is stylized with a long neck and plumage.

At several places the heavy patination on this bead is flaked off leaving small grooves on its body.

At Brahmanabad, triangles arranged side by side seem to be the popular motif¹⁸² and they are noticed on twelve beads. These coincide with their bases on convex bicone discs and on sides when they appear etched on triangular flat beads. In both the cases these specimens are matched by beads from Persian Baluchistan¹⁸³ found by SIR AUREL STEIN. On one tablet-shaped bead¹⁸⁴ the decoration consists of crosses radially arranged round a circle, a device closely parallel to a bead from Abydos in Egypt. On another, the surface is divided into quadrants with three tiny loops in each segment.¹⁸⁵ One has a bud-shaped decoration in a circle.¹⁸⁶ Scroll work occurs on certain barrel-shaped beads¹⁸⁷ in a pattern somewhat rare among Indian beads. Beads¹⁸⁸ with chevrons within zones, more commonly noticed on beads of the Southern Group, are also found.

Beads from Akra, though few in number are interesting. One spherical bead¹⁸⁹ has a *swastika* etched over it. Another has a cross¹⁹⁰ while a third one, square bi-pyramidal in shape, has circles on the projecting surfaces.¹⁹¹ A small hexagonal lenticular bead has two short lines on the shorter sides.¹⁹²

The only bead¹⁹³ from Hisbani has diagonally crossed lines and the pattern is as rare as its shape. An oval flat bead from Sirwahi¹⁹⁴ has identical patterns like certain beads from Persian Baluchistan.

¹⁸⁰ Plate XII, Fig. 11.

¹⁸¹ Plate XIV, Fig. 10.

¹⁸² Plate X, Figs. 7, 8.

¹⁸³ See section V below.

¹⁸⁴ Plate X, Fig. 1.

¹⁸⁵ Plate X, Fig. 4.

¹⁸⁶ Plate X, Fig. 2.

¹⁸⁷ Plate X, Figs. 15, 16.

¹⁸⁸ Plate X, Figs. 21-23.

¹⁸⁹ Plate IX, Fig. 13.

¹⁹⁰ Plate IX, Fig. 14.

¹⁹¹ Plate IX, Fig. 16.

¹⁹² Plate IX, Fig. 17.

¹⁹³ Plate IX, Fig. 11.

¹⁹⁴ Plate IX, Fig. 12.

A bead from Ahichchhatra¹⁹⁵ has a curious shape. It has a flat top with a pointed end shaped like a torpedo.

One bead from Bangad has longitudinal stripes,¹⁹⁶ a feature somewhat uncommon in Indian beads, but also shared by another specimen from Maski¹⁹⁷ in the Southern Group.

A rare bead from the RIVETT CARNAC collection has attached squares¹⁹⁸ within marginal bands with several dots interspaced near the limits.

SOUTH INDIAN GROUP

Beads belonging to this group do not exhibit much variety in their shapes; the decorative patterns are classified as follows:

TABLET-SHAPED BEADS

- Pattern No. 23. Small tablets decorated with minute spots closely set at the periphery.
24. Beads decorated with short radial lines near the periphery.
- 24a. Similarly decorated with additional square in the centre of the bead.
- 24b. Similar to 24 but with a dash in the centre.
- 24c. Similar to 24 but with a spot in the centre.
25. Beads decorated with radial markings similar to 24 but the pattern is divided into two hemispheres by long longitudinal lines.

CYLINDER BEADS

26. Beads decorated with one or two rows of chevrons in the centre with marginal bands at the ends.
27. Beads with marginal bands and a triangular pattern in between.
28. Beads with zonal bands at the sides and a row of oblique strokes in the centre.

¹⁹⁵ Plate XI, Fig. 20. Plate XIX, Fig. 11.

¹⁹⁶ Plate XVI, Fig. 17.

¹⁹⁷ Plate XVII, Fig. 18.

¹⁹⁸ Plate XV, Fig. 9.

DISTRIBUTION

Pattern 23. Tablet-shaped beads decorated with minute spots or radial lines at the periphery are very common in the megalithic and urn burials in South India. The former occur at Maski,¹⁹⁹ Peyal,²⁰⁰ Palghat,²⁰¹ Sulur,²⁰² Vellalur,²⁰² and the Coorg megaliths.²⁰³ The collection from Sulur and Vellalur consists of twelve beads of various sizes, whereas forty-five such are included in a photograph of the beads from Palghat.^{203a} The Urn burial at Peyal, in the Pudukkottai State, produced only one.

Pattern 24. The number of radially etched beads is similarly very great. Thirty-nine have been found in several "tumuli" in the Salem district.²⁰⁴ Eighteen occurred in the Vellalur megaliths,²⁰⁵ while four were excavated in a megalithic burial near Paravai.²⁰⁶ These are again found at Kupgal,²⁰⁷ in the burials in Wynaad;²⁰⁸ and known from the megalithic burials at Montapalle, near Arikamedu. Several such are preserved in the Madras Museum whose exact findspot is not certain.²⁰⁹ In the Hyderabad State several beads from Maski²¹⁰ are known. The type therefore is mainly megalithic.

Patterns 24a, b, and c. Radially etched beads sometimes have a square, a dash, or dot as an additional feature in the central decoration. These are distributed as follows:

24a. Maski,²¹¹ Paravai,²¹² Chandravalli,²¹³ Madras Museum.²¹⁴

24b. Maski,²¹⁵ Madras Museum.²¹⁶

24c. Madras Museum,²¹⁷ Sulur,²¹⁸ Vellallur.²¹⁸

¹⁹⁹ Plate XVII, Fig. 1.

²⁰⁰ Plate XVIII, Fig. 19.

²⁰¹ Plate XIX, Fig. 20.

²⁰² *AJ*, 13. Plate LXIX, Fig. 3; *MAN*, 1930, Plate L, 1-2.

²⁰³ *IA*, 4.13, Plate facing page 12.

^{203a} (See Plate XIX, Fig. 20.)

²⁰⁴ *IA*, 2.223. Plate facing page 226; Nos. 12-13.

²⁰⁵ *MAN*, 1930, p. 173.

²⁰⁶ *JASB*, 1888, Plate X.

²⁰⁷ Three beads in Foote Collection at Madras.

²⁰⁸ CAMMAIDE, in *MAN*, 1930, pp. 185-89.

²⁰⁹ *AJ*, 13. Plate LXXX, Fig. 1. (See also Plate XIX, Fig. 19.)

²¹⁰ *AR. Hyderabad*, 1936-37, Plate XII (a). [= Plate XVIII, Fig. 3 and Plate III, Fig. 11.]

²¹¹ Plate XVII, Fig. 5.

²¹² Plate XVIII, Fig. 11.

²¹³ Plate XVIII, Fig. 16. (Bead No. 2738 in the Mysore Museum.)

²¹⁴ Plate XVIII, Fig. 3; Plate XIX, Fig. 19.

²¹⁵ Plate XVII, Fig. 4.

²¹⁶ Plate XVIII, Fig. 5. Plate XIX, Fig. 19.

²¹⁷ Plate XVIII, Fig. 4. Plate XIX, Fig. 19.

²¹⁸ *AJ*, 13. Plate LXIX, Fig. 3.

Besides these a few specimens from Maski have crosses²¹⁹ and concentric radial lines²²⁰ indicating variations in the same type.

Pattern 25. On beads from Paravai²²¹ and the Madras Museum²²² the pattern is divided into two hemispheres separated by long lines.

Pattern 26. A chevron within marginal bands is a very common decorative motif in the Southern Group. Beads mostly occur in the megalithic burials but the type continues in the Satavahana Period also. Those from the former are generally barrel-shaped but plain cylinders seem to be preferred in the later stage. These are distributed over a very large area and are known to have been found at Bilikambe in the Nilgiris,²²³ at Chandravalli,²²⁴ Kondapur,²²⁵ Kolhapur,²²⁶ Maski,²²⁷ Montapalle, Muribetta Hill²²⁸ (Coorg), Paithan,²²⁹ Paravai,²³⁰ and Sangankallu.²³¹

Patterns 27-28. Beads with triangular patterns between zonal bands occur at Kallur,²³² Maski,²³³ and Paithan.²³⁴ Oblique strokes placed in between is a feature noticed on beads from Maski,²³⁵ Paravai,²³⁶ and Raigir.²³⁷

Individual Specimens. Besides the common patterns above noticed, a few tablet-shaped beads have different decorations. A specimen from Paravai²³⁸ has crossed lines enclosed within attached squares. The decoration on one bead from the Madras Museum²³⁹ consists of a wavy line around the periphery with seven squares distributed in the enclosing space. The collection at Maski includes beads with Pattern 26 on square cylinders²⁴⁰ as also on another irregular bead horizontally striped.²⁴¹ Two roughly

²¹⁹ Plate XVII, Figs. 6, 7, and Plate III, Fig. 12.

²²⁰ Plate XVIII, Fig. 8.

²²¹ Plate XVIII, Fig. 2.

²²² Plate XVIII, Fig. 9. Plate XIX, Fig. 19.

²²³ FOOTE, *Catalogue of the Madras Museum*; Plate XIV, 835; d 1-2.

²²⁴ Plate XVIII, Fig. 17. (Bead No. 2364 in the Mysore Museum.)

²²⁵ Plate XVIII, Fig. 20.

²²⁶ Plate III, Fig. 15.

²²⁷ Plate XVII, Figs. 17-22 indicating variations of the same pattern. (See also, *AR. Hyderabad*, 1936-37, Plate XXI, Fig. 2.)

²²⁸ *JASB*, 1888, Plate V.

²²⁹ Beads in the Hyderabad Museum.

²³⁰ *JASB*, 1888, Plate V.

²³¹ BDCRI, 8.3-4; Plate III, Fig. 3. [= Plate XVIII, Fig. 6; Plate XIX, Fig. 18.]

²³² *AR. Hyderabad*, 1937-40, Plate XI, Fig. c.

²³³ Beads in the Hyderabad Museum.

²³⁴ *AR. Hyderabad*, 1937-40, Plate XX, (a), Top right.

²³⁵ Plate XVII, Fig. 12.

²³⁶ Plate XVIII, Fig. 14.

²³⁷ BECK, in *MAN*, 1930, Art. 134.

²³⁸ Plate XVIII, Fig. 13.

²³⁹ Plate XVIII, Fig. 1.

²⁴⁰ Plate XVII, Fig. 17.

²⁴¹ Plate XVII, Fig. 18.

drawn squares on another bead²⁴² are closely paralleled by a specimen from Manjan Karnai.²⁴³

The accompanying map²⁴⁴ shows the distribution of the important decorative patterns in both the groups. These patterns, it will be noticed, are generally confined to certain geographical areas and very rarely repeat or overlap into the other. Their incidence outside the zone of intensity is so rare as to suggest even migratory factors, which have not been adequately explored.

Patterns 1-5 are confined to the Indus Valley, but in one case (pattern 3) it is found in the Gangetic Valley also. Patterns 6-22 have different distributions in the Northern Group but Nos. 11-13 are characteristic of the Gangetic valley.

Patterns 6 and 11 are represented by one specimen each at Kondapur and Maski, respectively.

Similarly Patterns 23-28 occur exclusively in the Southern Group and the only exceptions are Patterns 24, 26, and 28 which occur on only a few beads from Kosam, Brahmanabad and Taxila.

Beads with simple zonal bands occur in both the groups and have not been considered.

²⁴² Plate XVII, Fig. 10.

²⁴³ Plate XVIII, Fig. 18.

²⁴⁴ Plate VI.

CHART SHOWING THE DISTRIBUTION OF PATTERNS

<i>Pattern No.</i>	<i>Description</i>	<i>Northern Group</i>	<i>Southern Group</i>
1	Circles and lines		
2	Circles with arcs meeting each other	Exclusive to Indus Valley Cultures	
3	Marginal ring	except No. 3 on one bead at	
4	Figure-of-eight	Indor Khera in the Gangetic	
5	Guilloche	Valley	
6	Pentagonal pattern	Common	x
7	Large circles	Common	x
8	Circles within zonal limits	Common	x
9	Circles with dash in centre	Common	x
10	Spotted	Very common	x
11	Partitioned circles	Gangetic Valley 1 bead at	MASKI
12	Concentric circles & dots	Gangetic Valley	x
13	U-shaped markings and central decorations of stars etc.	Common	x
14	Pentagonal barrels	Very common	x
15	Pentagons and hexagons	Common	x
16	Elongated loops		x
17	Rectangular patterns	Common	x
18	Serrated lines in centre	Common	x
19	Three rows of dots	Scarce	x
20	Decorated at facets	Common	x
21	Square cylinders with strokes	Common	x
22	Drop pendants with decorations	Common	x
23	Minute spots at periphery	1 bead at Kosam	V. common
24	Radially etched	"	V. common
25	Radial lines and longitudinal markings	x	Common
26	Chevron within bands	Brahmanabad	V. common
27	Triangles within bands	x	Common
28	Oblique strokes within bands	Taxila	Common

V. Foreign Affinities

THE problem of foreign affinities is undoubtedly a complicated one. Many of the Indian beads have a striking similarity with others found elsewhere, but this apparent parallelism cannot be mistaken for a synchronism unless definite relationships can be established through a fuller archaeological and chronological data. Similarity of a large number of objects in a wider archaeological setting has to be considered before suggesting any possible intercourse or culture contact between two countries. The commonness of the treatment of decorative devices employed in the intricate process of etching is thus only one of the approaches along which the problem can further be investigated.

The following chart has been prepared to indicate the available data but does not aim at drawing inferences from these similarities.

(1) BEADS OF THE INDUS VALLEY PERIOD

<i>Indian Specimen, Description, Site and Reference</i>	<i>Foreign Parallel</i>	<i>References</i>
Beads with circles and lines in a complicated pattern		
MOHENJO-DARO	UR	WOOLLEY, Pl. 133.
MARSHALL, Pl. CXLVI, Fig. 43		AJ., Pl. LXVII, Fig.
MACKAY, <i>FEM.</i> , Pls. CXXV, 5; CXXXV, 3, 19 (g)		1 A, B
CHANHU-DARO	SHAH TEPPE	<i>Acta Archaeologica</i>
MACKAY, <i>Chanhu-daro</i> , Pl. LXXIX, 12 and Fig. 13 with difference in shape of the bead		Vol. VI (1935), pp. 41-42 (a cylindrical bead)

<i>Indian Specimen, Description, Site and Reference</i>	<i>Foreign Parallel</i>	<i>References</i>
<hr/>		
Cylinder beads with concentric circles with the outer arcs touching each other		
CHANHU-DARO	UR	WOOLLEY, Pl. 133.
MACKAY, <i>Chanhu-daro</i> , Pl. LXXIX, Fig. 9		<i>AJ.</i> , Pl. LXVII, Fig. 1 K
<hr/>		
Spherical beads with concentric circles with the outer arcs touching each other		
MOHENJO-DARO	KISH	MACKAY, <i>Sumerian Palace</i> , etc., Pl. LX, Fig. 63; <i>AJ.</i> , Pl. LXVI, Fig. 2 B
MARSHALL, Pl. CXLVI		
CHANHU-DARO		
MACKAY, <i>Chanhu-daro</i> , Pl. LXXIX, Fig. 11		
<hr/>		
Beads with a marginal ring		
MOHENJO-DARO	KISH	MACKAY, <i>Sumerian Palace</i> , etc., Pl. 60, Fig. 62.
MARSHALL, Pl. 146, Fig. 44		
CHANHU-DARO		
MACKAY, <i>Chanhu-daro</i> , Pl. LXXIX, 1-3		
HARAPPA		
VATS, <i>Harappa</i> , Pl. CXXXI, Fig. 4 b-c		
(Also at INDOR KHERA in the Gangetic Valley)		
<hr/>		

<i>Indian Specimen, Description, Site and Reference</i>	<i>Foreign Parallel</i>	<i>References</i>
Beads with a figure-of-eight design		
CHANHU-DARO	UR	WOOLLEY, Pl. 133-34.
MACKAY, <i>Chanhu-daro</i> , Pl. LXXIX, 4-7		AJ, Pl. LXVII, Fig. I, d and n
MAJUMDAR, <i>Explorations in Sind</i> , Pl. XVII, Fig. 25	KISH	MACKAY, <i>Sumerian Palace</i> , etc., Pl. LX, Fig. 55
		JRAS, 1925, Pl. X, Fig. 3
	TELL ASMAR	AJ, Pl. LXVI, Fig. 8a
		ABIA, 1932, Pl. I

Beads with a guilloche pattern

CHANHU-DARO	KISH	LANGDON, <i>Excavations at Kish</i> , I, Pl. XXIV, Fig. 2.
MACKAY, <i>Chanhu-daro</i> , Pl. LXXIX, Fig. 8		MACKAY, <i>Sumerian Palace</i> , etc., Pl. IV, No. B. 23
	TELL ASMAR	AJ, Pl. LXVI, Fig. 8 G

Barrel-shaped bead with circles within V-shaped marginal lines

CHANHU-DARO	UR	AJ, Pl. LXVII, Fig. 1, C. H. K and M
MACKAY, <i>Chanhu-daro</i> , Pl. LXXIX, Fig. 14		

<i>Indian Specimen, Description, Site and Reference</i>	<i>Foreign Parallel</i>	<i>References</i>
Flat lenticular bead with double quadrant arcs at the margin with a circle in the centre	UR	WOOLLEY, Pl. 133
CHANHU-DARO		MACKAY, <i>Sumerian Palace</i> , etc., Pl. LX, 54
MACKAY, <i>Chanhu-daro</i> , Pl. LXXIX, Fig. 15	KISH	<i>JRAS</i> , 1925, Pl. X Fig. 3 <i>AJ</i> , Pl. LXVI, Fig. 6a (Pattern almost identical with one marginal loop less)

(2) BEADS FROM HISTORIC SITES

Triangular flat beads decorated with
triangles arranged on sides

BRAHMANABAD
(Pl. X, Fig. 7)

PERSIAN *AJ*, Pl. LXVIII, Fig. 1
BALUCHISTAN Lower register of
(Bampur?) Type A

Lenticular beads decorated with tri-
angles

BRAHMANABAD
(Pl. X, Fig. 8)

PERSIAN *AJ*, Pl. LXVIII, Fig.
BALUCHISTAN 1.
First bead in lower
register

TAXILA

(BECK, *Beads from Taxila*, Pl. II,
Fig. 13)

<i>Indian Specimen, Description, Site and Reference</i>	<i>Foreign Parallel</i>	<i>References</i>
<hr/>		
Beads with a cross joined by wavy lines at opposite ends		
SIRWAHI (Pl. IX, Fig. 13)	PERSIAN BALUCHISTAN	<i>AJ</i> , Pl. LXVIII, Fig. 1 Beads 1-2 in the upper register
BRAHMANABAD (Not illustrated)		
<hr/>		
Beads decorated with scroll work		
BRAHMANABAD (Pl. X, Fig. 15-16)	PERSIAN BALUCHISTAN	<i>AJ</i> , Pl. LXVIII, Fig. 1 Bead 4 in upper register
<hr/>		
Bead with radial crosses around a circle		
BRAHMANABAD (Pl. X, Fig. 1)	EGYPT (Greco- Roman) Saft-el Henna	<i>JASB</i> , 10. 58, Fig. 3
<hr/>		
Beads with a cross enclosed within squares		
TAXILA (BECK, <i>op. cit.</i> , Pl. I, Fig. 5) (Pl. VIII, Fig. 14) BHAGALPUR (<i>AJ</i> , Pl. LXVII, Fig. 4) (Pl. XVI, Fig. 14)	KHOTAN	STEIN, <i>Serindia</i> , Pl. IV Kh. 02. r
<hr/>		

<i>Indian Specimen, Description, Site and Reference</i>	<i>Foreign Parallel</i>	<i>References</i>
<hr/>		
Bead with wavy lines and bands		
ROHTOYYA (Pl. XVI, Fig. 7)	PERSIAN BALUCHISTAN	<i>AJ</i> , Pl. LXVIII, Fig. 1 B (bead of Type II)
<hr/>		
Beads with U-shaped markings around the periphery and central design of dots or crosses		
KANAUJ (Pl. XV, Fig. 13)	TEHERAN	<i>AJ</i> , Pl. LXIX, Fig. 1
KOSAM		
RAJGHAT		
<hr/>		
Beads with pentagonal patterns with a geometrical figure in each com- partment		
KOSAM (Pl. XII, Fig. 2)	UR	<i>JASB</i> , 10-58, Fig. 2
RAIRH (Pl. XI, Fig. 6)	MOGUL GHUNDAI	STEIN, <i>MASI</i> , 37, Pl. XII, M. NW. 2
	EGYPT (XI Dynasty)	<i>JASB</i> , 10-57, Fig. 1
	ABYDOS	
<hr/>		
South Indian tablet-shaped beads with radial lines on the margin		
Several sites	SYRIA Ras Shamra	Cf. <i>Antiquity</i> , 18 (1944), p. 203
<hr/>		
Beads with chevron within marginal bands		
Several sites	NINEVEH (Associated with a Ro- man fibula)	<i>Archæologia</i> , 79 (1929), Text figure 2 e.f. on page 143
<hr/>		

In the chart given above general similarities of seven patterns of the Indus Valley Period and eleven in the historical period have been traced outside India. Is this evidence merely iniquitous or circumstantial? The continuance of the practice of etching beads for over a long period in a vast country like India shows that it has been a very active centre of bead manufacture. This is paralleled only by Persia where etched carnelian plaques²⁴⁵ are still made to this day, but if it was so in remote antiquity, it is not known. Could it be therefore that India was the source of origin of this industry, from where it spread to the west?

The identity of our earliest bead material with those from Mesopotamia is so complete (and proved from other archæological data) that CHILDE²⁴⁶ believes India to be the centre of fabrication and that the workshops of etched beads at Ur were manned by Indus Valley artisans.

While the links between the Sumerian and the Indus Valley civilizations are gradually being established, the case with the material from the later historical sites is quite different. No accurate chronological data exists for the material on either side as to yield fruitful results to show possible existing connections or culture contacts.

There are some considerations, however, which may briefly be stated but cannot be emphasized or insisted upon. If the commerce with the various countries was by sea in the historical period, the place of Cambay as a great trading port²⁴⁷ deserves to be prominently mentioned. Agate and carnelian mines in its neighbourhood were being worked from a remote antiquity. Beads and other manufactured articles were being exported in large quantities to different parts of the globe, particularly Persia, African coasts, Egypt, Asia Minor, and even Rome.²⁴⁸ Literary data is replete with references on this point.²⁴⁹ Although no etched beads from the immediate vicinity of Cambay are at present known, it is possible that with the extensive bead trade was also carried the technique of etching. With the expansion of Roman commerce at various trading ports, particularly in South India,²⁵⁰ the possibilities of such a procedure were immense. The occurrence

²⁴⁵ *AJ.* 13. 392, and Plate LXIX, Fig. 4.

²⁴⁶ *Antiquity*, 13.12.

²⁴⁷ Cf. ARKELL, "Cambay and the Bead Trade," *Antiquity*, 10.292-305.

²⁴⁸ MOTICHANDRA, "The Art of Cutting Hardstone Ware in Ancient and Modern India." *Journal of the Gujarat Research Society*, I-4, 71-85.

²⁴⁹ Arikamedu on the east coast of India is an instance on this point establishing the trade relations between Rome and India in A.D. 30 and earlier. *Ancient India*, No. 2, pp. 17-21. Clay copies of Roman coins have been found in Satavahana layers at Kolhapur, Kondapur, and Chandravalli. These are also known from unstratified stray finds at Karad in the Satara district of the Bombay Presidency and Kholapur in the Akola district in the Central Provinces. For literature on the Roman contacts with India, see *Ancient India*, No. 2, p. 18.

of certain patterns which do not extend beyond the Satavahana Period²⁵¹ in the Deccan traced at Nineveh²⁵² in association with a Roman fibula, or the complete identity of a pattern from Brahmanabad with beads of the Greco-Roman period in Egypt, are noteworthy in this respect.

The possibilities of the land route from the Northwest Frontier are again not altogether barred, since many objects of the Mediterranean type have been found in the region around Taxila and Peshawar. Trade in precious stones is said to have stopped with the downfall of Perseus and Mithrades in Rome where oriental stones were brought after the conquest of Alexander. The early connections of India (particularly Sind) with the Iranian plateau and parts of Persian Baluchistan, are established by ceramic evidence and the identity of the decorative patterns noticed above. The evidence for the relationships between the sites in the Gangetic Valley and the Northwestern Frontier is not adequate at present, but as exploration and excavation progresses, the links known through such objects like cemented eye beads commonly found in the Mauryan levels at Patna, Taxila, and in Susa in Persia, Ur, and Nineveh, will further be established, as were the Roman contacts in the excavations at Rajghat and more recently at Sisupalgarh.

The problem of the origin of the etched bead industry in India, therefore, revolves mainly around the commercial relations.

²⁵⁰ The earliest literary references to bead trade in Cambay. (See *Antiquity*, 10. 298-99.)

²⁵¹ Pattern 26.

²⁵² R. CAMPBELL THOMPSON, *Archæologia*, 79 (1929), 143.

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THE Plates are arranged according to Types and Find-spots. These are described in the following order. (1) Serial Number (2) Material (3) Shape (4) Pattern (5) Reference (6) Find-spot (7) Period if known (8) Present location.

ABBREVIATIONS USED

Materials and shapes: Agt. = Agate; Bl. Agt. = Black Agate; Car. = Carnelian; Wh. Agt. = White Agate; Bar. = Barrel-shaped, circular in cross section; Cir. = Circular; Cyl. = Cylinder-shaped, circular in cross section; Dbl. Convex. = Double Convex; Frag. = Fragmentary; Hexa. = Hexagonal; Lent. = Lenticular; Ovl. = Oval-shaped; Ptn. = Pattern; Rect. = Rectangular; Sph. = Spherical; Sq. = Square; Tbl. = Tablet-shaped; Trun. = Truncated.

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M-d. MARSHALL, *Mohenjo-daro and the Indus Valley Civilization*.

LOCATIONS

- Alhd. Municipal Museum, Allahabad.
 BKB. Bharat Kala Bhavan, Benares.
 Kolh. Archæological Museum, Kolhapur.
 Lck. Provincial Museum, Lucknow.
 Shah. Private collection of Shri Nath Shah, Benares.
 Other museums and collections are stated in full.

PLATE I

SITE MAP SHOWING THE CENTRES OF ETCHED BEADS

The Map shows the principal centres of etched beads described in the text. Besides these a number of sites in the N. W. F. Province are said to have yielded such beads but details regarding them are not available. "Many thousands of such beads have been found in excavations of Greek, Scythic, Parthian, and Kushan sites throughout the Northwest of India."

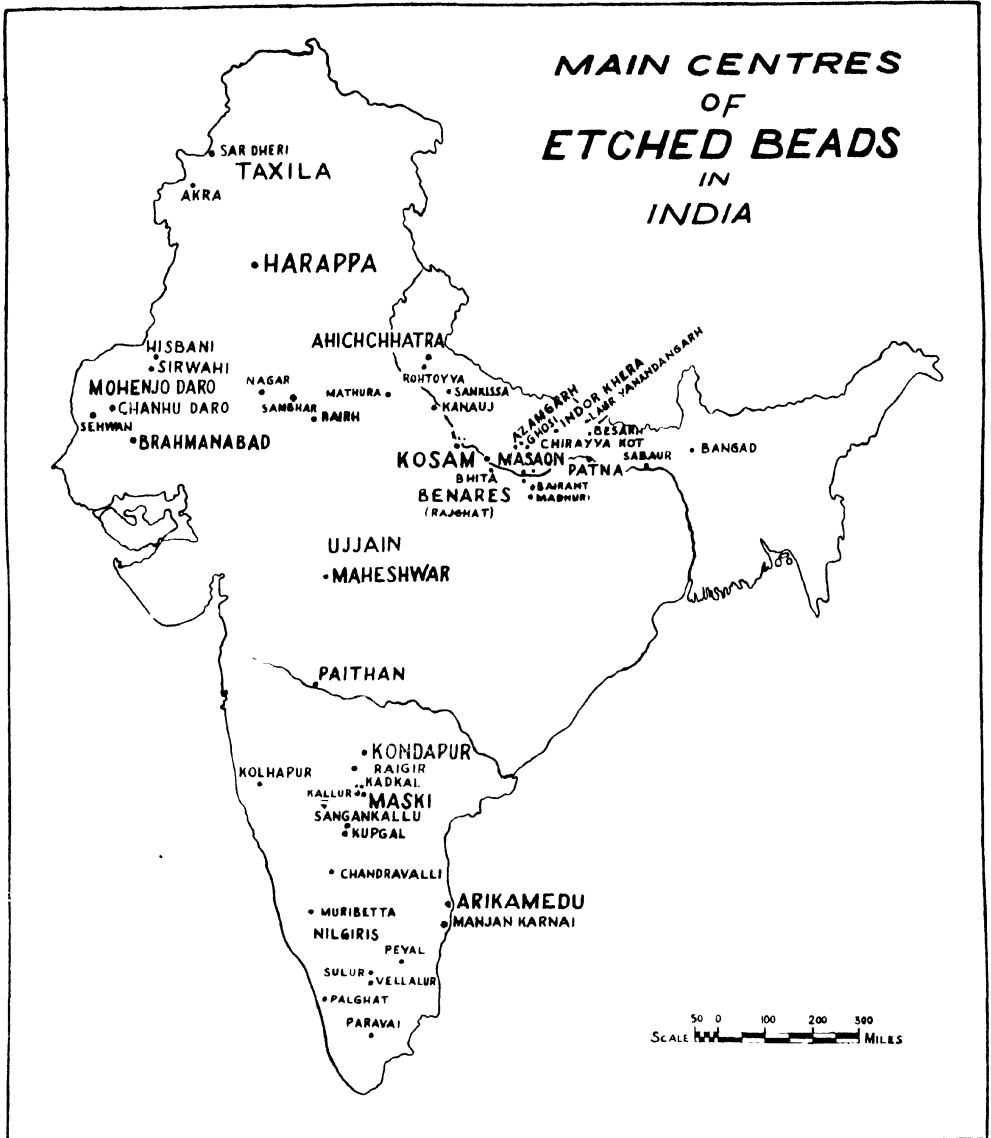


PLATE II

ETCHED BEADS OF TYPE II

- 1 Mohenjo-daro.
- 2- 5 Chanhudaro.
- 6- 7 Taxila, Sirkap.
- 8- 9 Patna.
- 10-11 Brahmanabad, Sind.
- 12 Ujjain, British Museum.
- 13-14 Kanauj. RIVETT CARNAC Collection, British Museum.
- 15 Masaoon, Bharat Kala Bhavan, Benares.
1. Car. Tbl. Circles and arcs. *FEM*, Pl. CXI, 4.
2. } Car. Bar. Dbl. Convex. Ptn. 2. *Ch-d*, Pl. LXXIX, 14.
- 2a. }
3. Car. Rect. Dbl. Convex. Ptn. Var. 1. *Ch-d*, Pl. LXXIX, 12.
4. Car. Ovl. Dbl. Convex. Ptn. 4. *Ch-d*, Pl. LXXIX, 6.
5. Car. Trun. Sph. Ptn. 2. *Ch-d*, Pl. LXXIX, 10.
6. Car. Sph. Lines. *BT*. Pl. I, 2. Taxila Museum. First century A.D.
7. Car. Sph. Ptn. 10. *BT*. Pl. II, 27. Taxila Museum. First century or later.
8. Car. Bar. Zonal bands and spots, Patna Museum.
9. Car. Sph. Ptn. 10. Patna Museum.
10. Car. Sph. Ptn. Var. 7. Brahmanabad.
11. Car. Bar. Zonal bands and scroll, Brahmanabad.
12. Car. Sph. Hexagonal pattern, British Museum.
13. Car. Sph. Ptn. 8. British Museum.
14. Car. Sph. Ptn. Var. 7. British Museum.
15. Car. Cyl. Zonal bands, BKB.



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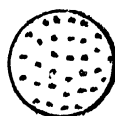
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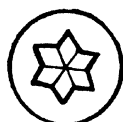
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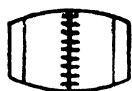
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PLATE III

ETCHED BEADS OF TYPE II

- 1- 8 Kosam.
- 9-12 Maski.
- 13 Kondapur.
- 14-15 Kolhapur.

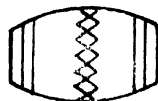
- 1. Car. Bar. Ptn. 18. Alhd. BKB.
- 2. Car. Bar. Ptn. 14. Alhd. BKB.
- 3. Car. Bar. Alhd.
- 4. Car. Bar. Ptn. 15. Alhd. Lck. BKB.
- 5. Car. Bar. Ptn. 16. Alhd. BKB.
- 6. Car. Bar. Zonal bands. Alhd. Lck.
- 7. Car. Sph. Ptn. 7. Alhd.
- 8. Car. Sph. Ptn. 7. Alhd. (Also at Ghosi. SHAH Coll.)
- 9. Car. Bar. Zonal bands. Hyd.
- 10. Car. Cyl. (*AR. Hyderabad*, 1936-37, Pl. XII (a),) Hyd.
- 11. Car. Tbl. Ptn. 24. Maski Museum.
- 12. Car. Tbl. Var. 24. Maski Museum.
- 13. Car. Sph. Ptn. 6. Kondapur Museum.
- 14. Car. Sph. Dot-and-dash pattern. Brahmapuri Exc. Kolh. Second century.
- 15. Car. Bar. Ptn. 26. Brahmapuri Exc. Kolh. Sixteenth century A.D.



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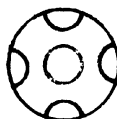
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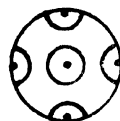
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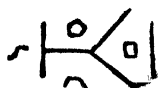
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PLATE IV

ETCHED BEADS OF TYPE III AND VARIETIES A-B

- 1- 4 Beads of Type III.
- 5- 6 Beads of Variety A.
- 7 Bead of Variety B.

- 1. Car. Ovl. Tbl. Frag. Ptn. 3. Harappa. 2,300 B.C. Cf. VATS, *Excavations at Harappa*, Pl. CXXXI, Fig. 4. d.
- 2. Car. Sph. Zonal band. Sirkap, Taxila, first century A.D. BECK, *Beads from Taxila*, Pl. I, Fig. 1.
- 3. Car. Bar. Ptn. Var. 6a. Kosam. Vyas Collection. Alhd. Unpublished.
- 4. Car. Bar. Ptn. 15. Kosam, Vyas Collection, Alhd. Unpublished.
- 5. Car. Sph. Ptn. 10. Kosam (Alhd. Lck.).
 Patna (Patna Museum No. 1005).
 Rajghat (BKB).
 Chirayya Kot (Shah Coll.).
- 6. Car. Cyl. Ptn. 26. Maski. Hyderabad Museum.
- 7. Car. Cyl. Zonal bands. Bhita. Lucknow Museum No. 48: 112.



BEADS OF TYPE III



VARIETY 'A'

VARIETY 'B'

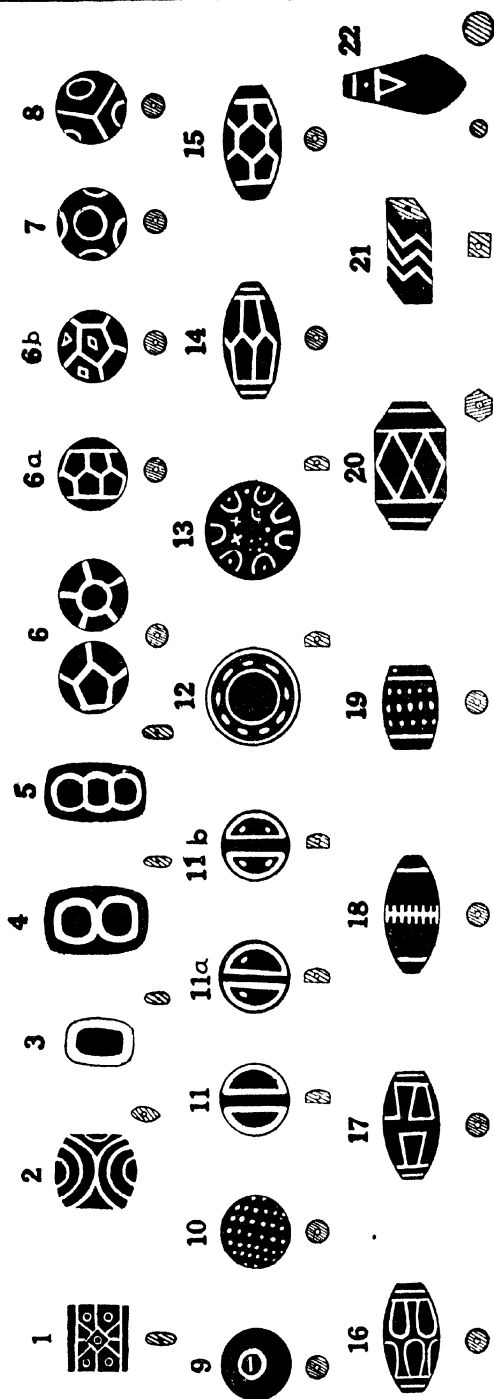
PLATE V

PRINCIPAL DECORATIVE PATTERNS

The plate shows diagrammatic illustrations of the important decorative patterns discussed in this paper. Divided into two groups, each illustration is accompanied by a cross section of the bead at right-hand corner. The beads are arranged with the perforation axes horizontal to the eye

DECORATIVE PATTERNS ON ETCHED BEADS

NORTHERN GROUP



SOUTHERN GROUP

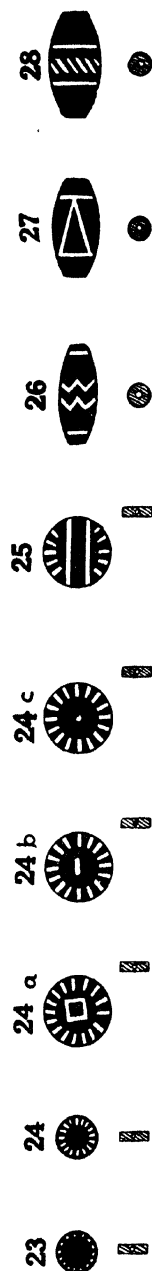


PLATE VI

DISTRIBUTION OF DECORATIVE PATTERNS

The map shows the distribution of Patterns 6, 10, 14, and 24, 26 in the Northern and Southern Groups respectively. Mark the incidence (only one specimen) of Pattern 23-24 at Kosam; and Pattern 26 at Brahmanabad in Sind, both of which are frequent in the Southern Group. Similarly the occurrence of Pattern 6a at Kondapur is noteworthy.

DISTRIBUTION OF ETCHED PATTERNS ON BEADS IN INDIA

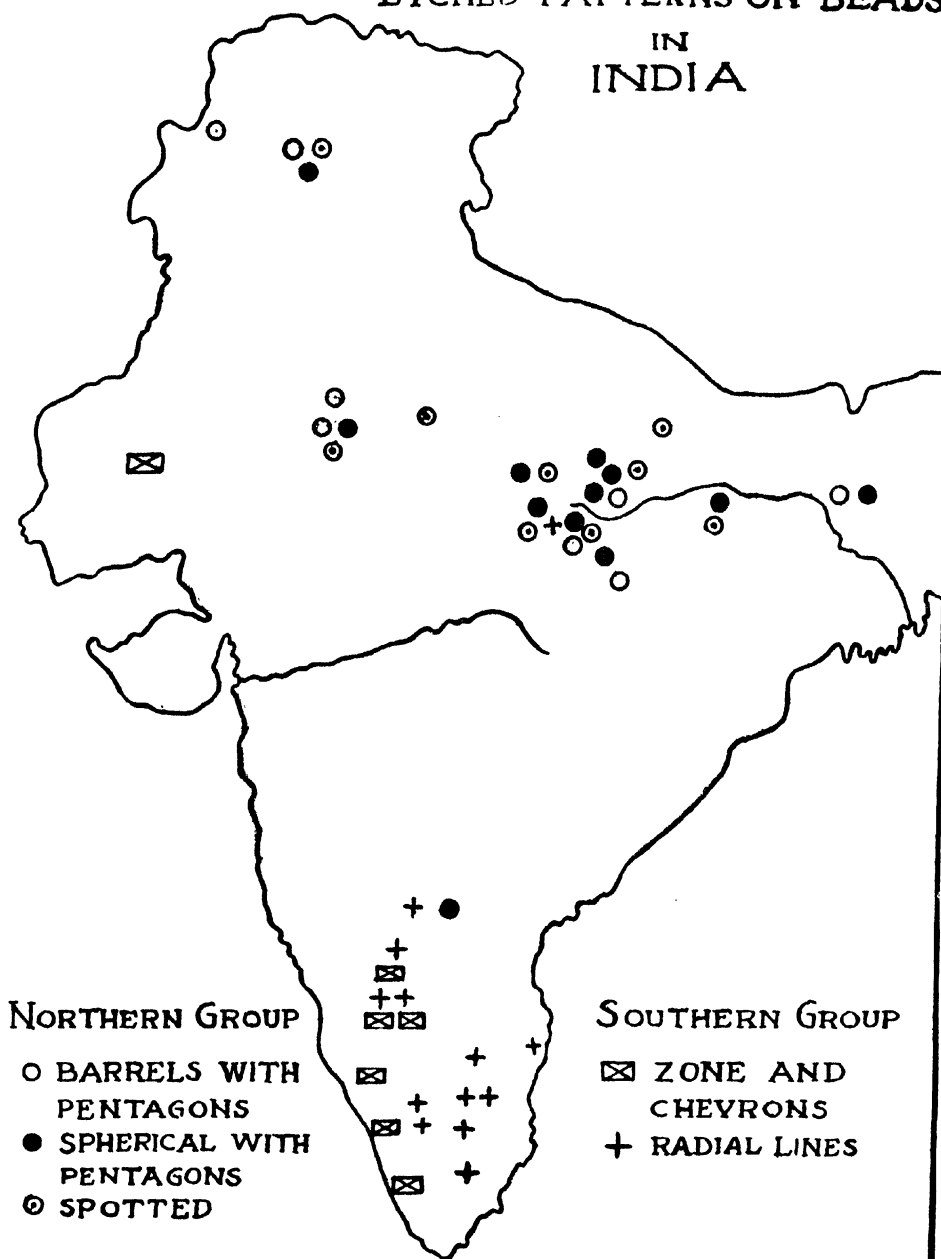


PLATE VII

ETCHED BEADS OF TYPE I

BEADS OF THE INDUS VALLEY CULTURE

- 1- 5. Mohenjo-daro.
 6-13. Chanhudaro.
 14-16. Harappa.

1. Car. Rect. Dbl. Convex. Ptn. 1. *M-d*, Pl. CXLVI, 43.
2. Car. Rect. Dbl. Convex. Ptn. 1. *FEM*, CXXV, 5.
3. Car. Cir. Dbl. Convex. Ptn. Ring. *M-d*, Pl. CXLVI.
4. Car. Sph. Dbl. Convex. Ptn. 2.
5. Car. Ovl. Tabl. Dbl. Convex. Ptn. 3. *M-d*, Pl. CXLVI, 44.
6. Car. Hexa. Dbl. Convex. Ptn. Var. 1. *Ch-d*, Pl. LXXIX, 13.
7. Car. Ovl. Dbl. Convex. Ptn. with double quadrant arcs and a circle in the centre. *Ch-d*, Pl. LXXIX, 15.
8. Car. Bar. Dbl. Convex. V-shaped lines. *Ch-d*, Pl. LXXIX, 16.
9. Car. Sph. Trun. *Ch-d*, Pl. LXXIX, 11. Ptn. Var. 2.
10. Car. Cyl. Ptn. Var. 2. *Ch-d*, Pl. LXXIX, 9.
11. Car. Ovl. or Cir. Dbl. Convex. Ptn. 3. *Ch-d*, Pl. LXXIX, 1-3.
12. Car. Ovl. Dbl. Convex. Ptn. 4. *Ch-d*, Pl. LXXIX, 4-7.
13. Car. Ovl. Dbl. Convex. Ptn. 5. *Ch-d*, Pl. LXXIX, 9.
14. Car. Bar. Ptn. 2. VATS, Pl. CXXXI, 4a.
15. Car. Ovl. Tbl. Ptn. 3. VATS, Pl. CXXXI, 4b-c.
16. Car. Bar. Ptn. Horizontal lines. *Ancient India*, No. 3, Pl. LI, 14 and Fig. 26:11.



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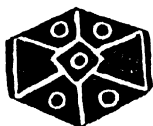
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PLATE VIII

ETCHED BEADS OF TYPE I

BEADS FROM BHIR MOUND, TAXILA

- 1- 2. Fifth Century B.C.
- 3- 7. Fourth Century B.C. Taxila Museum.
- 8-16. Third Century B.C.
- 17-18. Unstratified Beads in Ridgeway Collection University Museum
of Archæology and Ethnology, Cambridge.

- 1. Car. Sph. Zonal band. *BT.* Pl. II, 4.
- 2. Car. Sph. Waves. *BT.* Pl. II, 10.
- 3. Car. Sph. Ptn. 9. *BT.* Pl. II, 8.
- 4. Car. Tbl. Etched at margins. *BT.* Pl. II, 11.
- 5. Car. Tbl. Dbl. Convex. Ptn. of triangles. *BT.* Pl. II, 13.
- 6. Car. Tbl. Dbl. Concave. Double axe decoration, *BT.* Pl. II, 15.
- 7. Car. Tbl. Dbl. Concave. Double axe decoration. *BT.* Pl. II, 14.
- 8. Bl. Agt., Sph. Ptn. 6. *BT.* Pl. II, 1.
- 9. Bl. Agt., Sph. Floral patterns. *BT.* Pl. II, 2.
- 10. Car. Bar. Ptn. 6a. *BT.* Pl. II, 7.
- 11. Bl. Agt., Sph. Ptn. 10. *BT.* Pl. II, 5.
- 12. Bl. Agt., Sph. Zonal bands. *BT.* Pl. II, 6.
- 13. Bl. Agt., Sph. Zonal band. *BT.* Pl. II, 3.
- 14. Car. Sq. Tbl. Cross within squares. *BT.* Pl. I, 5.
- 15. Car. Sph. Wavy band. *BT.* Pl. II, 9.
- 16. Chalcedony, Sph. Ptn. 10, *BT.* Pl. II, 16.
- 17. Car. Tbl. Spotted. *BT.* Pl. II, 30; Cambridge.
- 18. Car. Tbl. Ptn. 12. *BT.* Pl. II, 31; Cambridge.



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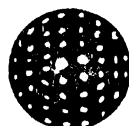
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PLATE IX

ETCHED BEADS OF TYPE I

1-10.	Taxila.	Taxila Museum.
11.	Hisbani, Sind.	P. W. Museum, Bombay.
12.	Sirwahi, Sind.	?
13-17.	Akra, Bannu, N. W. F. P.	Indian Museum, Calcutta. (Nos. 3610-3615.)

1. Car. Cube. Crosses and lines at facets, *BT*. Pl. I, 4; first century A.D.
2. Bl. Agt., Sph. Ptn. 18. *BT*. Pl. I, 6; first century B.C.
3. Bl. Agt., Bar. Ptn. 14. *BT*. Pl. II, 17; first century A.D.
4. Car. Bar. Ptn. 28. *BT*. Pl. II, 25; first century A.D. ?
5. Agt. Bar. Zonal bands, *BT*. Pl. II, 22; first century A.D.
6. Car. Bar. Zonal bands, spots and waves. *BT*. Pl. II, 28; first century A.D. or later.
7. Car. Sph. Ptn. 9. *BT*. Pl. II, 24; first century A.D.
8. Car. Sph. Waves, *BT*. Pl. II, 23; first century A.D.
9. Bl. Agt., Ptn. 8. *BT*. Pl. II, 19; first century A.D.
10. Bl. Agt., Sph. Zonal stripes, *BT*. Pl. II, 21; first century A.D. ?
11. Car. Rect. Tbl. Crossed lines. *JUB*. 4-2, 18. P. W. M. Bombay.
12. Car. Ovl. Tbl. Ptn. on both sides, *IA*, II. p. 5, Fig. 21.
13. Car. Sph. Swastika Ptn. Unpublished.
14. Car. Sq. Tbl. Cross. Unpublished. Indian Museum, No. 3614. See also Plate XIX, 16.
15. Car. Sph. Ptn. 7. Unpublished. Indian Museum, No. 3615. See also Plate XIX, 17.
16. Car. Sq. Dbl. Convex. Ptn. 7. Unpublished. Indian Museum, No. 3613. See also Plate XIX, 15.
17. Car. Hex. Tbl. Marginal bands. Unpublished. Indian Museum, No. 3611. See also Plate XIX, 13.



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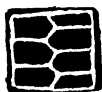
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PLATE XI

ETCHED BEADS OF TYPE I

- 1-12. Rairh, Jaipur State. Jaipur Museum.
- 13-18. Indor Khera, Central Doab. Indian Museum, No. Ir. K. 35, Calcutta.
- 19-20. Ahichchhatra, Ramnagar, U.P. Indian Museum, Calcutta.
1. Car. Bar. Zonal bands and lines intersecting at ends. *ER*, Pl. XXIII, 6.
 2. ? Bar. Ptn. 16. *ER*. Pl. XXIII, 2.
 3. ? Bar. Circles between zones. *ER*. Pl. XXIII, 5.
 4. ? Hex. Bar. Decoration at facets. *ER*. Pl. XXIII, 4.
 5. ? Bar. Ptn. 16. *ER*. Pl. XXIII, 15.
 6. ? Sph. Ptn. 6b. *ER*. Pl. XXIII, 16.
 7. ? Sph. Loops at one margin. *ER*. Pl. XXIII, 14.
 8. ? Bar. Ptn. 17. *ER*. Pl. XXIII, 3.
 9. ? Sph. Ptn. 7. *ER*. Pl. XXIII, 17.
 10. ? Sph. Ptn. 10. *ER*. Pl. XXIII, 10.
 11. ? Bar. Ptn. 14. *ER*. Pl. XXIII, 1.
 12. ? Sph. Ptn. 6a. *ER*. Pl. XXIII, 18.
 13. Car. Ovl. Tbl. Ptn. 3. Unpublished. See also Plate XIX, 9.
 14. Car. Bar. Wavy lines between bands. Unpublished.
 15. Car. Bar. Zigzags between bands. Unpublished.
 16. Car. Trunc. Bi-cone Tbl. Unpublished. See also Plate XIX, 10.
 17. Agt. Sph. Ptn. 10. Unpublished.
 18. Bl. Agt. Sph. Ptn. 6a. Unpublished.
 19. Car. Bar. Zonal bands. Indian Museum, No. 2712, Plate XIX, 12.
 20. Bl. Agt. Tapering ends with flat top. Circles and lines. Indian Museum, No. 2713. Plate XIX, 11.



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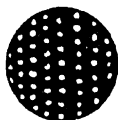
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PLATE XII

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ETCHED BEADS OF TYPE I

BEADS FROM KOSAM, UNSTRATIFIED

1. Car. Bar. Ptn. 14. Ptn. Lck. BKB. Alhd.
Agt. Bar. Ptn. 14. BKB. Lck. Alhd.
2. Car. Bar. Ptn. 6b. Alhd. BKB.
3. Car. Bar. Ptn. 15. Alhd. Lck. BKB.
4. Car. Bar. Ptn. 15. Alhd. BKB.
5. Bl. Agt. Ptn. Var. 18. Patna Museum. (String 7751.)
6. Bl. Agt. (also Car.) Bar. Ptn. 18. Patna, BKB. Alhd.
7. Car. Bar. Ptn. 17. Alhd. BKB.
8. Bl. Agt. (also Car.). Bar. Ptn. 16. Patna (String 7751); BKB. Alhd.
9. Car. Bar. Ptn. 19. Patna (String 7733); Alhd. Lck.
10. Car. Bar. Ptn. Four elongated eyes between bands. Alhd.
11. Bl. Agt. Bar. Ptn. Triangle-headed banners. Alhd.
12. Car. Bar. Ptn. Three eyes with central dots. Alhd.
13. Car. Bar. Ptn. Crossed lines. Alhd.
14. Car. (also Bl. Agt.) Bar. Crosses in diamonds. Alhd. Patna. (String 7750, 7753.)



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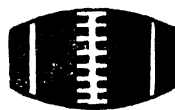
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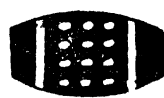
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PLATE XIII

ETCHED BEADS OF TYPE I

BEADS FROM KOSAM

1. Car. and Bl. Agt. Sph. Ptn. 6. Alhd. BKB. Lck. Patna.
2. Car. Sph. Pointed loops and dots. Alhd.
3. Car. and Bl. Agt. Sph. Ptn. 7. BKB. Alhd.
4. Car. Sph. Ptn. 7. BKB.
5. Car. and Bl. Agt. Sph. Alhd. BKB.
6. Car. Sph. Wave between zones. Alhd.
7. Car. Sph. Lines between zones. Alhd.
8. Bl. Agt. Short lines regularly spaced. Alhd.
9. Wh. Agt. Sph. Ptn. Heart-shaped. Alhd.
10. Bl. Agt. and Car. Sph. Ptn. 6a. Alhd. BKB. Lck. Patna.
11. Wh. Agt. Sph. Ptn. 9. Alhd.
12. Car. Lent. Tbl. Ptn. 23. Alhd.
13. Car. Sph. Zonal bands. Alhd.
14. Car. Lent. Tbl. Ptn. Crosses. Alhd.
15. Car. Lent. Tbl. Ptn. Cross. Alhd.
16. Car. Cyl. Ptn. Lines between zonal bands. Alhd.
17. Car. Sq. Cyl. Ptn. V-shaped lines. Alhd. BKB. Patna.
18. Car. Sq. Cyl. Ptn. Crossed lines. Alhd.
19. Car. Cyl. Crossed diamonds between zonal bands. Alhd. BKB. Patna.



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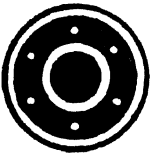
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PLATE XIV

ETCHED BEADS OF TYPE I

BEADS FROM KOSAM

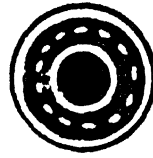
1. Bl. Agt. Plano-convex. Ptn. 12. Alhd. BKB. Lck. Patna.
2. Bl. Agt. Tbl. Ptn. Cross. Alhd.
3. Bl. Agt. Plano-convex. Ptn. 12. Alhd. BKB. Patna.
4. Car. Crescent-shaped. Spacer. Ptn. Zigzag. Alhd. (Six specimens.)
5. Car. ? Tooth pendant. Alhd.
6. Car. Leech-shaped. Ptn. Horizontal band. Alhd. (Twelve specimens.)
7. Bl. Agt. Bar. Frag. Ptn. zones and circles. Alhd.
8. Bl. Agt. Bar. Frag. Ptn. 10. Patna Museum. (String 7751.)
9. Car. Lent. Tbl. Ptn. 13. Alhd.
10. Bl. Agt. Sph. Decorated with birds within rhomboid spaces. Alhd.



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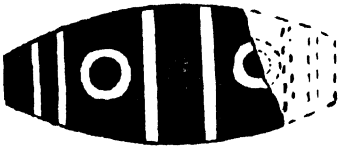
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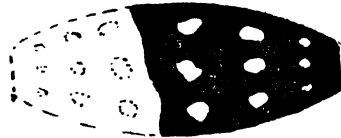
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PLATE XV

ETCHED BEADS OF TYPE I

1-12. Beads in the RIVETT CARNAC Collection, British Museum.

13-15. Beads from THEOBALD's Collection.

The beads in the RIVETT CARNAC collection are variously described as collected from Behar Khas, Fyzabad, Gorakhpur, Ghosi, Kanauj, Karauli, Khwajapur (Etawah), Khukhundur, Kumaon, Mani Dih, N. W. Punjab, Oudh, Ranki, Rudarpur, Sankissa, Serai Aghat, Sohan Kot, and Tikri. The Plates published in *Journal of Indian Art and Industry*, 9 (1900) do not, however, specify the exact find-spots, and beads from several sites are grouped together. Details regarding some of these were kindly furnished by A. GHOSH from the originals in the British Museum. The Plate is adopted from Journal noted above and from drawings sent by Mr. GHOSH.

BEADS IN THEOBALD'S COLLECTION

About twenty-one beads from several sites in the Benares District collected by W. THEOBALD. Three tabular beads from Plate VI, *PASB*, 1869, are illustrated here.



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PLATE XVI

ETCHED BEADS OF TYPE I

- 1- 6. Beads from Rajghat, Benares.
7. Bead from Rohtoyya, Lucknow Museum.
- 8-10. Beads from Madhuri, Bharat Kala Bhavan, Benares.
- 11-13. Beads from Bhita, Lucknow Museum.
14. Bead from Bhagalpur, C. E. A. W. Oldham's Collection.
- 15-18. Beads from Bangad, Ashutosh Museum of Art, Calcutta.
1. Milky Quartz. Pl. Convex. Ptn. 11. BKB. Alhd.
2. Car. Lent. Tbl. Ptn. 13. BKB.
3. Car. Tbl. Ptn. Var. 11. BKB.
4. Car. Sph. Zigzag between zones. BKB.
5. Bl. Agt. Sq. Cyl. Zigzag with dots. Alhd.
6. Car. Sq. Cyl. Ptn. 21. BKB. Lck. Alhd.
7. Car. Cyl. Zones and wavy lines. Lck.
8. Wh. Agt. Pl. Convex. Ptn. 11b. BKB. (Several specimens.)
9. Bl. Agt. Pl. Convex. Ptn. 12. BKB. Lck.
10. Bl. Agt. Pl. Convex. Ptn. 11a. BKB. Alhd.
11. Car. Lent. Dbl. Convex. Toggle. Stripes. Alhd.
12. Car. Sph. Lines between zones. Alhd.
13. Car. Ovl. Lent. Tbl. Zones. BKB.
14. Car. Sq. Tbl. Cross within borders. Unperforated.
15. Car. Sph. Attached squares, Ashutosh Museum, Calcutta.
16. Car. Bar. Faceted, Ashutosh Museum, Calcutta.
17. Car. Lent. Bar. Horizontally striped, Ashutosh Museum, Calcutta.
18. Car. and Bl. Agt. Sph. Ptn. 6. GOSWAMI, Pl. XXXII, Nos. 1696, 1691, 2079, Ashutosh Museum, Calcutta.



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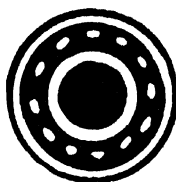
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PLATE XVII

ETCHED BEADS OF TYPE I

BEADS FROM MASKI, HYDERABAD STATE

1. Car. Tbl. Ptn. 23. Maski Museum, Hyderabad Museum.
2. Car. Tbl. Ptn. Var. 24. Maski and Hyderabad.
3. Car. Tbl. Ptn. 24. *AR. Hyderabad*, 1936-37, Pl. XII (a), Hyderabad Museum.
4. Car. Tbl. Ptn. 24b. Maski Museum.
5. Car. Tbl. Ptn. 24a. Maski Museum.
6. Car. Tbl. Ptn. Var. 24. Maski Museum.
7. Car. Tbl. Ptn. Var. 24. Maski Museum.
8. Car. Tbl. Ptn. Var. 24. Maski Museum.
9. Car. Tbl. Cross. Maski Museum.
10. Car. Tbl. Dbl. Squares. Maski Museum.
11. Agt. Plano Convex. Ptn. 11. Maski Museum.
12. Car. Sph. Ptn. 28. Maski Museum.
13. Agt. Sph. Ptn. Var. 28. Maski Museum.
14. Car. Sph. Spotted. *AR. Hyderabad*, 1936-37, Pl. XII (a); Hyderabad Museum.
15. Car. Sph. Stripes and dots. *AR. Hyderabad*, 1936-37, Pl. XII (a); Hyderabad Museum.
16. Car. Sq. Cyl. Diamonds between bands. *AR. Hyderabad*, 1936-37, Pl. XII(a); Hyderabad Museum.
17. Car. Sq. Cyl. Ptn. 26. Maski Museum.
18. Car. Cyl. Horizontally striped. Ptn. 26. Hyderabad Museum.
19. Car. Bar. Ptn. 26. *AR. Hyderabad*. 1935-36, Pl. VI; 1936-37; Pl. XII(a); Hyderabad Museum.
20. Car. Bar. Ptn. 26. Maski Museum.
21. Car. Bar. Ptn. 26. Maski Museum.
22. Car. Bar. Ptn. 26. *AR. Hyderabad*, 1935-36, Pl. VI(d); 1936-37, Pl. XII(a); Hyderabad Museum.
23. Car. Bar. Ptn. Var. 26. Maski Museum.
24. Car. Bar. Ptn. Var. 28. Maski Museum.



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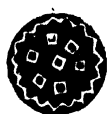


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PLATE XVIII

ETCHED BEADS OF TYPE I

- 1- 5. Madras Museum.
 6. Sangankallu, Bellary, Deccan College Inst. Museum.
 7. Paithan, Hyderabad Museum.
 8. Kallur, Hyderabad Museum.
 - 9-15. Paravai, Madura, Madras Museum.(?)
 - 16-17. Chandravalli, Mysore State, Mysore Museum.
 18. Manjan Karnai, Chingleput, BECK Collection.
 19. Peyal, Pudukkottai State, Pudukkottai State Museum.
 - 20-21. Kondapur, Hyderabad State, Kondapur Museum.
1. Car. Tbl. Zigzag border with small squares in centre, FOOTE, *Catalogue*, Pl. XIII, 844, Pl. XIX, 19.
 2. Car. Tbl. Ptn. 25. *Ibid.*
 3. Car. Tbl. Ptn. 24a. *Ibid.*
 4. Car. Tbl. Ptn. 24c. *Ibid.*
 5. Car. Tbl. Ptn. 24b. *Ibid.*
 6. Car. Bar. Ptn. 26. BDCRI, 8.3-4, Pl. III. See also Pl. XIX, 18.
 7. Car. Bar. Zones and triangular patterns. *AR. Hyderabad*, 1936-37, Pl. XXa.
 8. Car. Bar. Ptn. 27. *AR. Hyderabad*, 1937-40, Pl. XIc.
 9. Car. Tbl. Ptn. 25. *JASB*. 1888, Pl. X, Fig. 3b.
 10. Car. Tbl. Vertical bands with horizontal stripes in between and lines (?) at ends. *Ibid.*
 11. Car. Tbl. Ptn. 24a. *Ibid.*
 12. Car. Tbl. Ptn. Var. 24a. *Ibid.*
 13. Car. Tbl. Attached squares. with crosses. *Ibid.*, Fig. 3a.
 14. Car. Bar. Ptn. 27. *Ibid.*
 15. Green Jasper (?), Tbl. Ptn. 24. *Ibid.*, Fig. 3d.
 16. Car. Tbl. Frag. Ptn. 24a. Mysore Museum, No. 2738.
 17. Car. Bar. Ptn. 26. Mysore Museum, No. 2364.
 18. Car. Tbl. Squares. *AJ*. XIII, Pl. LXVI, Fig. 9.
 19. Car. Tbl. Ptn. 23. Pudukkottai Museum.
 20. Car. Cyl. Ptn. 26.
 21. Car. Hexa. Cyl. Unperforated. Broad zigzag band.
 22. Pattern on above.



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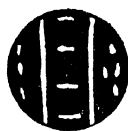
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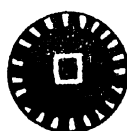
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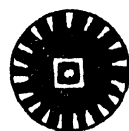
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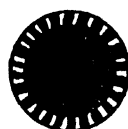
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PLATE XIX

PHOTOGRAPHS OF ETCHED BEADS OF TYPE I

NORTHERN GROUP

Figs. 1-8. Beads from Madhuri, Dist. Benares, Author's Collection.

9-10. Beads from Indor Khera, Indian Museum, Calcutta.

11-12. Beads from Ahichchhatra, Indian Museum, Calcutta.

13-17. Beads from Akra, Bannu, Indian Museum, Calcutta.

SOUTHERN GROUP

Fig. 18. Beads from Sangankallu, Bellary. Deccan College Museum.

19. Beads from Madras Museum.

20. Beads from Palghat, Madras Museum.

1. Car. Rect. Lent. Bar. Zonal bands.
2. Car. Bar. Ptn. 15.
3. Car. Cyl. Chevrons.
4. Bl. Agt. Sph. Ptn. 10.
5. Bl. Agt. Bar. Ptn. 14.
6. Bl. Agt. Sph. Ptn. 6a.
7. Wht. Agt. Sph. Stripes.
8. Bl. Agt. Sph. Ptn. 6.
9. Car. Ovl. Lent. Ptn. 3. See also Plate XI, Fig. 13.
10. Car. Hexa. Lent. Zonal bands and marginal lines with loops. Plate XI, 16.
11. Car. Frag. Pointed end and flat top. Ptn. 8. See Plate XI, Fig. 20.
12. Car. Bar. Zonal bands. See Plate XI, Fig. 19.
13. Car. Bar. Trun. Zonal bands. See Plate IX, Fig. 17. (Indian Museum, No. 3611.)
14. Car. Sph. Swastika. See Plate IX, Fig. 17. (Indian Museum, No. 3612.)
15. Car. Dbl. Convex. Bicone. Plate IX, Fig. 16. (Indian Museum, No. 3613.)
16. Car. Sq. Lent. Plate IX, Fig. 14. (Indian Museum, No. 3614.)
17. Car. Sph. Ptn. 7. Plate IX, Fig. 15. (Indian Museum, No. 3615.)
18. Car. Bar. Ptn. 26. Plate XVIII, Fig. 6.
19. Car. Tbl. Beads. Ptns. 24, 24a, b, c, and 25. *AJ.* XIII, Pl. LXX, Fig. 1, and FOOTE, *op. cit.*, Pl. XIII, No. 844. See also Plate XVIII, Figs. 1-5.
20. Car. Tbl. Beads, Ptn. 24.

